Service Source

Xserve (Late 2006)

Updated: 7 August 2007

© 2006, 2007 Apple Inc. All rights reserved.

Apple Inc.

© 2007 Apple Inc. All rights reserved.

Under the copyright laws, this document may not be copied, in whole or in part, without the written consent of Apple.

Every effort has been made to ensure that the information in this document is accurate. Apple is not responsible for printing or clerical errors.

Apple
1 Infinite Loop
Cupertino, CA 95014-2084
USA
+ 1 408 996 1010
www.apple.com

Apple, the Apple logo, and Xserve are trademarks of Apple Inc., registered in the U.S. and other countries.

Xserve (Late 2006)

Contents

Take Apart

General Information 7

Apple Drive Module 9

Power Supply 12

Opening the Xserve (Late 2006)Top Cover 14

FB-DIMM Memory 17

PCI-X and PCI-E Riser Cards 20

PCI-X and PCI-E Expansion Cards 22

Battery 26

Optical Drive 28

Airflow Duct 31

Fan Array 34

Front Panel Board Cable 37

Backplane-to-Logic Board I/O Cable 39

Optical Drive Cable 41

Locking Mechanism Rod 43

Front Bezel Assembly 46

Front Panel Buttons 49

Light Pipe 51

Front Panel Board 54

Drive Interconnect Backplane 57

Xserve RAID Card 61

Power Distribution Board Cable 65

Xserve RAID Card Battery 67

Power Distribution Board 70

Processor Heat Sink 72

Processor 80

Video Mezzanine Card 84

Logic Board 86

Rear ID Button 92

ID Tab 94

Enclosure 97

Troubleshooting

General Information 100

- What's New 100
- Selecting an Alternative Startup Method from the Front Panel 105
- Ports 105
- Resetting the Logic Board 106
- Power-On Self Test (POST) Error Indications 107
- Diagnostic LEDs 108
- Memory Diagnostic LEDs 111
- Power Supply Verification 112
- Internal Sensor Locations 112
- Front Panel Status Lights 113
- Remote Monitoring Software 114
- Apple Xserve Diagnostics (AXD) 115

Symptom Charts 116

- How to Use the Symptom Charts 116
- Startup 116
- Built-in Video 118
- Hard Drive Modules 119
- Internal Optical Drive 119
- USB Devices 120
- FireWire Devices 121
- Network Problems 122

Views

Internal Views 124
Exploded View 1 124
Exploded View 2 125

External Views 126
Front View 126
Rear View 126

Appendix

Service Source

Take Apart

Xserve (Late 2006)

© 2006, 2007 Apple Inc. All rights reserved.

General Information

Overview

Xserve (Late 2006) is a server computer designed to mount into a rack; Apple recommends that you remove the Xserve from the rack before replacing or installing all parts except hard drives. You can replace hard drives while the Xserve is operating and still in the rack.

Identifying an Xserve (Late 2006) using the front panel is difficult since it looks almost identical to the previous Xserve G5 model. To identify the Xserve (Late 2006), check the rear panel. Xserve (Late 2006) has two power supply bays on the right side of the rear panel. Previous Xserve G5 models have a single, built-in power supply.

What's New

See "General Information" in the Troubleshooting chapter for an overview of new features in Xserve (Late 2006).

Front and Rear Panel Ports and Indicators

See "External Views" in the Views chapter for descriptions of all front and rear panel ports, switches, buttons, and LED indicator lights.

Mounting in a Rack

For information on mounting Xserve (Late 2006) in a rack, see the Xserve (Late 2006) Setup Guide.

Tools

You will need the following tools:

- Phillips #2 scewdriver
- Phillips #1 screwdriver
- Small flat-blade screwdriver
- Nylon probe tool or similar plastic pry tool
- Needlenose pliers

If the Xserve is locked, you will also need the Xserve's Allen wrench key.

Note: Many take-apart procedures do not require tools, because several internal components are fastened with thumbscrews for easy removal and replacement.

Server Identifier Light/Button

The identifier light on the Xserve's front panel turns on when internal sensors or a systems administrator detects a problem with the Xserve. (The light can also be turned on by pressing the identifier button.) This indicator will help you locate which Xserve in a rack needs servicing. In addition, you can use the identifier button to select several alternative startup methods from the front panel. See "Selecting an Alternative Startup Method from the Front Panel" in the Troubleshooting chapter.

Note: A duplicate identifier light/button is on the Xserve's back panel.

A Note on the Illustrations

The photos and drawings in this manual were based on a pre-production unit. Your Xserve may look slightly different from the one in the illustrations.

Apple Drive Module

Xserve (Late 2006) includes three hard drive bays on the front panel. Hard drives come as modules, known as Apple drive modules (ADMs), attached to carriers; they are removed from or installed in the Xserve as a unit. ADMs have been available from Apple in various capacities for all Xserve and Xserve RAID models, and in multiple interface types. Xserve G4 and Xserve RAID use parallel ATA (PATA) ADMs, and Xserve G5 uses serial ATA (SATA) ADMs. Xserve (Late 2006) can use SATA ADMs, and ADMs with a new, third interface type known as serial attached SCSI (SAS). It is important to understand ADM forward compatibility and backward compatibility with older Xserve models, since some combinations of ADM and Xserve or RAID work properly while other combinations do not. The following table summarizes this compatibility.

	Xserve G4	**Xserve RAID**	**Xserve G5**	**Xserve (Late 2006)**
PATA ADM for Xserve G4	OK	OK	NO*	NO*
SATA ADM for Xserve G5	NO*	NO*	OK	OK (but not supported)
SATA ADM for Xserve (Late 2006)	NO*	NO*	OK (but not supported)	OK
SAS ADM for Xserve (Late 2006)	NO†	NO†	NO††	OK

* PATA connector is physically different from SATA connector so this ADM will not fit completely into slot.

† PATA connector is physically different from SAS connector so this ADM **will not** fit completely into slot.

†† Will fit completely into slot but ADM will not work or be recognized by the Xserve. Installing the SAS ADM should not damage the drive, however.

Note: Blank drive carriers, which may fill some of the hard drive bays, follow the same take-apart procedure as hard drives. If you are replacing a blank carrier with a drive module, instruct the Xserve's administrator to keep the blank for possible future use. Blank carriers must be installed in all empty bays to maintain proper airflow through the Xserve.

Tools

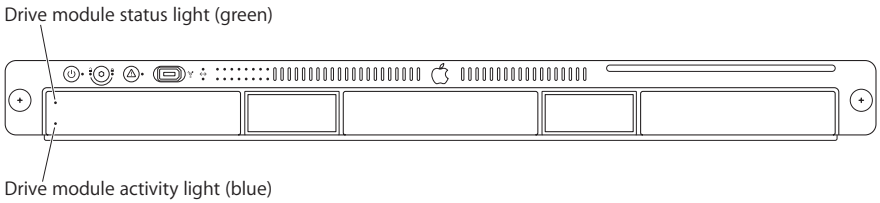
No tools are required for this procedure.

Preliminary Steps

Before you begin, make sure the drives are in the unlocked position. Also, make sure the drive being replaced is not in use by any application and is not being shared by the Xserve (See the Mac OS X Server documentation for information about shared drives.) To do this, you may need to first unmount the drive by using the command-line tools or by dragging the disk icon to the Trash.

You can replace or install hard drives while the Xserve is running; you do not need to shut down or open the Xserve first.

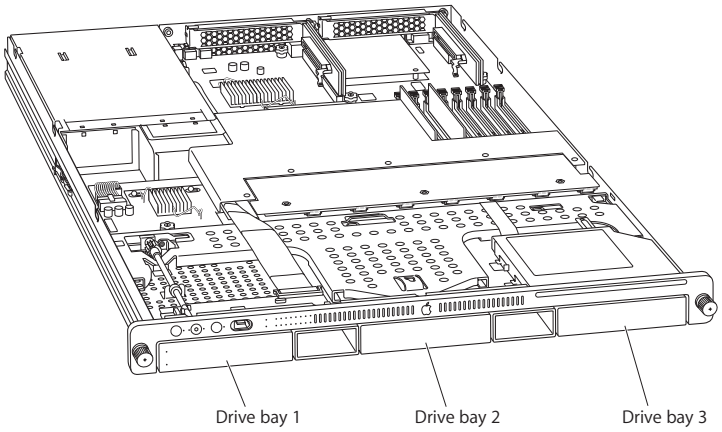
Note: There are two LED indicators on the front of each drive.



- The upper LED shows drive status: a green light indicates the drive is good; a yellow or red light indicates the drive should be replaced.
- The lower LED shows drive activity: when the blue light is blinking, the system is reading from or writing to the drive. To avoid losing data, never remove a drive when the lower LED is blinking.

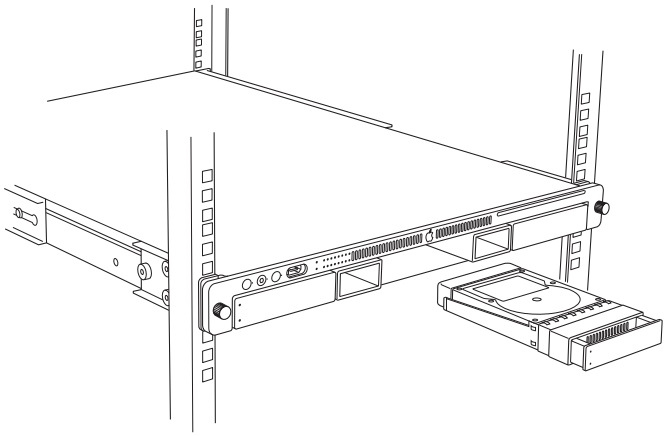
Warning: Drives must be in the unlocked position before you attempt to remove a drive. If the drives are locked, pulling on the drive to remove it could damage the drive handle.

Part Location



Procedure

1. Make sure the drive being replaced is not in use by any application and is not being shared by the Xserve. (See the Mac OS X Server documentation for information about shared drives.)
2. Unmount the drive (by using the command-line tools or by dragging the volume icon to the Trash).
3. Press the handle on the front of the drive module so that the handle pops out. Wait for the upper LED on the drive to go out. Then grasp the drive handle, and pull the drive module out of the Xserve.



Replacement Note: Press and release the handle on the replacement drive to open it, and slide the module into the bay until it is firmly seated. Then press the handle in flush with the front panel. The disk status light will turn green to indicate normal operation.

Power Supply

You can replace or install a power supply from the back panel without removing the Xserve (Late 2006) from the rack. If the Xserve has two power supplies, they are hot-swappable; the Xserve will continue to operate using only one supply while the second is removed.

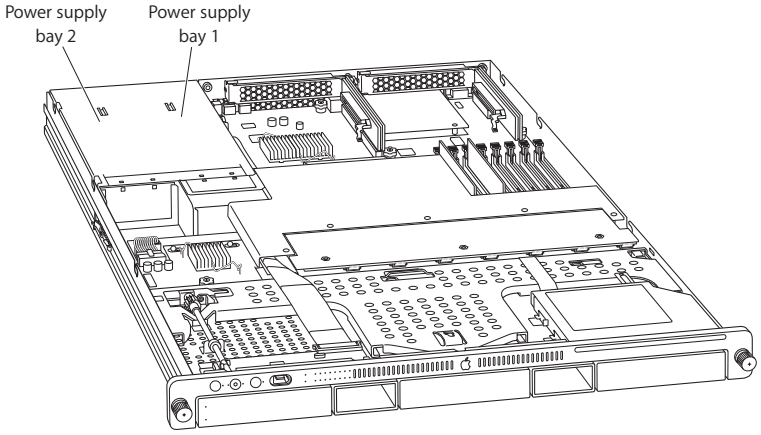
Tools

No tools are required for this procedure.

Preliminary Steps

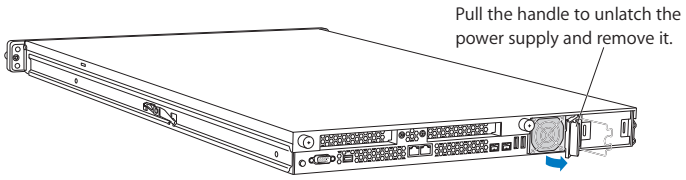
There are no preliminary steps for this procedure.

Part Location



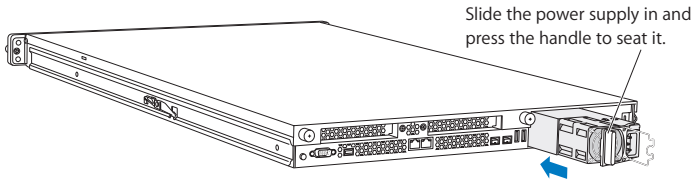
Procedure

1. Unplug the power cord from the power supply you are removing.
2. Pull the handle to release the power supply and slide it out of the bay.



Replacement Procedure

1. Press and release to open the handle on the new power supply, slide it all the way into the bay, and then press the handle to seat the power supply and lock it in place.



2. Connect the power cord to the power supply.
   Note: If the Xserve is already running on a second power supply, the status light on the new supply turns green to indicate normal operation as it starts sharing the load. If the Xserve is not turned on, the supply status light blinks green when the power cord is plugged in to an outlet with power..

Opening the Xserve (Late 2006) Top Cover

The top cover on the Xserve (Late 2006) does not remain installed in the rack as it did in previous Xserve G5 models. The entire Xserve enclosure, including its top cover, must be removed from the rack as a unit before the top cover can be removed to gain access to any internal components.

Tools

No tools are required for this procedure. You may, however, find a Phillips screwdriver useful in releasing the thumbscrews in step 4 below

Preliminary Steps

Serial Number

Be sure to write down the Xserve's serial number. If the Xserve's software must be set up after service is complete, the serial number will be required for login. The serial number is located on a pull-out tab at the bottom-center of the rear panel.

Unlocking the Server

If the Xserve is in the locked position (the yellow security LED on the front panel is on), use the Allen key that came with the Xserve to unlock it. The lock secures the Xserve enclosure top cover and all three drive modules. You can also order spare keys using Apple part number 922-6144.

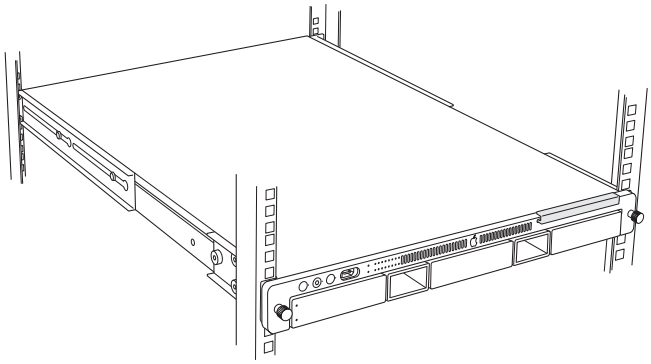
Important: An option in the Security pane of System Preferences lets you inactivate a connected keyboard and mouse when the enclosure lock is engaged. This option is turned off by default. When the enclosure is locked (the light is on), the Xserve might not recognize peripheral devices such as a keyboard, mouse, or storage device. Unlock the lock to use those devices.

Shutting Down

You must shut down the Xserve before replacing or installing all parts except the hard drives and power supplies. Before shutting down, be sure to alert users that the Xserve will be unavailable for a period of time.

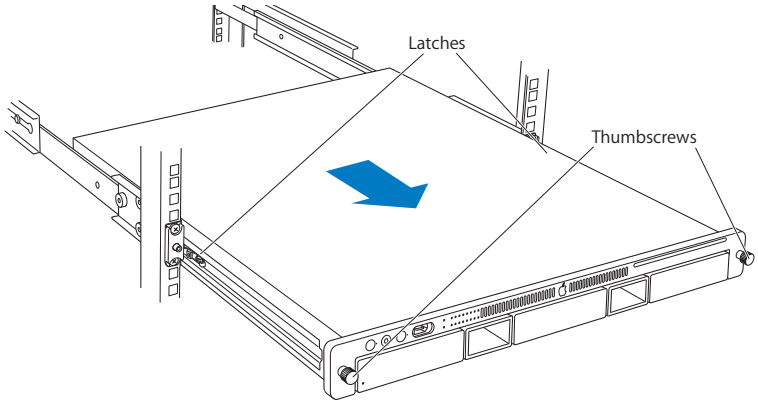
Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it..

Part Location



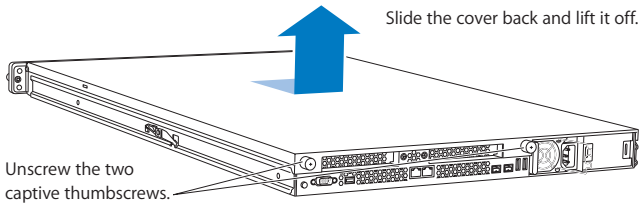
Procedure

1. Shut down the Xserve (see the Xserve User'sGuide for help) and then wait a few moments to let the Xserve internal components cool.
2. If the Xserve case is locked, use the enclosure key to unlock the security lock on the front panel.
3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. Loosen the thumbscrews at both ends of the front panel.
5. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



6. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack rails. Set the Xserve on a flat surface.

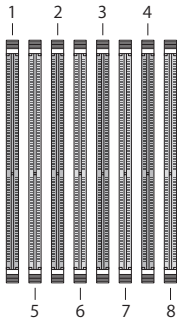
7. Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.
   Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.



8. When you're finished working inside the Xserve, replace and secure the cover, slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

FB-DIMM Memory

The Xserve (Late 2006) has 8 memory slots. The systems come with at least 1 gigabyte (GB) of memory on two fully-buffered dual inline memory modules (FB-DIMMs). To improve performance and capacity, you can install additional DIMMs for a total of up to 32 GB of memory. The 8 memory slots are labeled DIMM 1 through DIMM 8.



You can use the following memory in the Xserve (Late 2006):

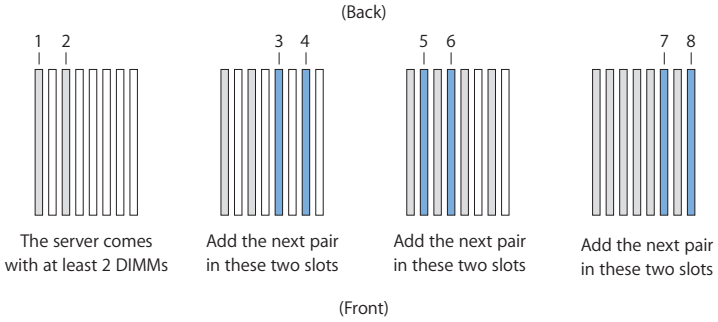
- 667 MHz DDR2 ECC FB-DIMMs
- 512 MB, 1 GB, 2 GB, or 4 GB in matching pairs (optimal, 4 or 8 identical DIMMs)
- 36 devices per DIMM, maximum
- Error-correcting code (ECC)

Important: Apple recommends that you use Apple-approved FB-DIMMS. Other FB-DIMMs might degrade the performance of the Xserve. DIMMs from older Xserve systems are not compatible with this Xserve.

Note: Before you purchase DIMMs other than those recommended by Apple, make sure that the memory manufacturer conforms to the Joint Electronic Device Engineering Council (JEDEC) specification. Make sure that the DIMMs support the correct timing modes and that the Serial Presence Detect (SPD) feature has been implemented in accordance with the JEDEC specification. To check DIMM compatibility, see the Macintosh Products Guide on Apple's website at www.apple.com/guide. You can purchase Apple-approved memory online from the Apple Store at www.apple.com/store.

Installation Rules

You must install DIMMs in pairs, and the DIMMs in each pair must be identical (the same size, speed, etc.). The first pair is installed in slots 1 and 2. Install the next pair in slots 3 and 4. Subsequent pairs go slots 5 and 6, and then slots 7 and 8.


(Back)
1 2
3 4
5 6
7 8
The server comes with at least 2 DIMMs
Add the next pair in these two slots
Add the next pair in these two slots
Add the next pair in these two slots
(Front)

For Best Performance

For the best performance, use identical DIMMs in all slots and fill up slots 1 through 4 before you install DIMMs in slots 5 through 8. If you don't have eight identical DIMMs, install identical DIMMs in slots 1 through 4 and a second set of four identical DIMMs in slots 5 through 8. If you can, after you fill slots 1 through 4, add a full set of four DIMMs in slots 5 through 8 instead of just a pair in slots 5 and 6.

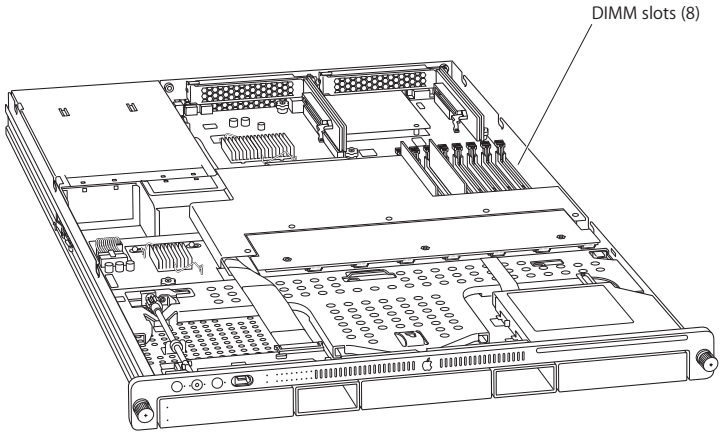
Tools

No tools are required for this procedure.

Preliminary Steps

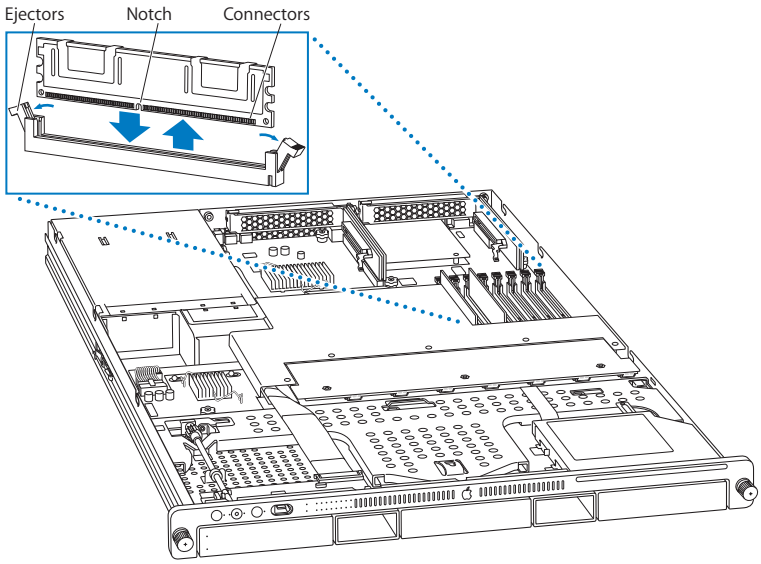
Before you begin, open the Xserve and place the bottom housing on a sturdy, flat surface.

Part Location



Procedure

1. Push down the ejectors on the DIMM slot.
2. Holding the DIMM by both top corners, lift it straight up out of the Xserve.



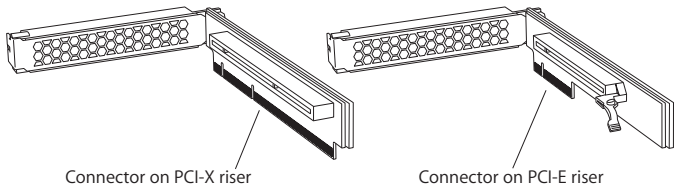
Warning: When removing or installing the DIMM, handle it only by the edges. Do not touch its connectors. Lift the DIMM straight up from the connector to remove it, and insert it straight down into the connector to install it. Do not rock the DIMM from side to side.

Replacement Note: The DIMM is designed to fit into the slot only one way. Be sure to align the notch in the DIMM with the small rib inside the slot.

PCI-X and PCI-E Riser Cards

The Xserve (Late 2006) uses two types of PCI riser cards to accommodate expansion card installation:

- A PCI-E riser card, which can go in either slot, and accepts only PCI-E cards
- A PCI-X riser can go in slot 1, and accepts only PCI-X cards



Tools

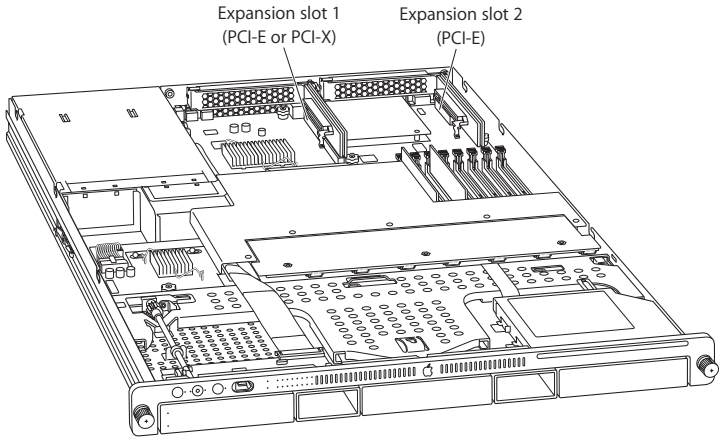
The only tool required for this procedure is a Phillips #1 screwdriver.

Preliminary Steps

Before you begin, open the Xserve and place the bottom housing on a sturdy, flat surface.

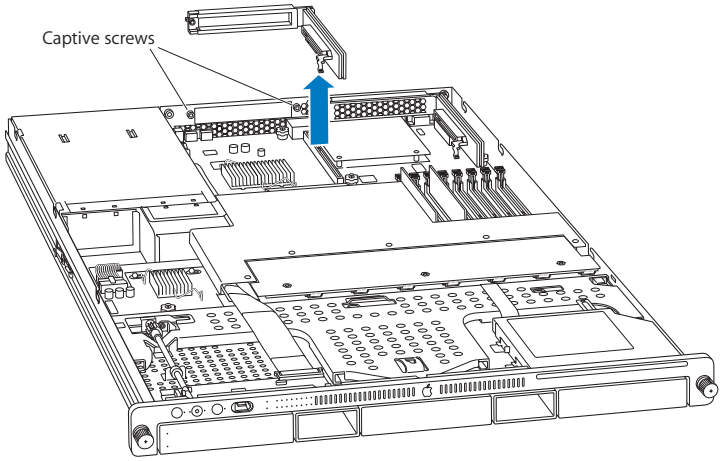
Important: Be sure the Xserve is turned off and unplugged before you install or remove an expansion card or riser.

Part Location

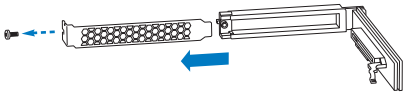


Procedure

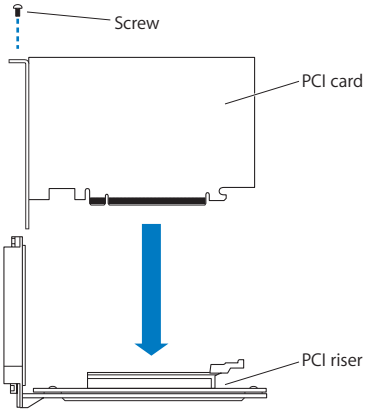
1. Loosen the two captive screws that secure the riser bracket to the back panel.



2. Carefully pull up on the bracket and riser, to disconnect the riser from the logic board. If you are removing a blank riser card so that you can install a graphics card in the riser, do the following:
   • Remove the screw on the riser bracket and remove the port access cover.



   Seat the PCI card in the riser slot and replace the screw to secure the card in the riser.



3. If you are removing a riser card so that you can replace it with a new riser card, remove any expansion card installed in the original riser card and transfer the card to the replacement riser.

PCI-X and PCI-E Expansion Cards

The Xserve (Late 2006) has two expansion slots:

- Slot 1, which accepts full-length (9 inch) PCI-E or PCI-X cards
- Slot 2, which accepts half-length (6.6 inch) PCI-E cards

The Xserve (Late 2006) accepts expansion cards that meet these specifications:

Slot 1:

- Accepts 64-bit PCI-X 133 MHz cards (using a PCI-X riser)
- Also accepts 32-bit or 64-bit 33, 66, or 100 MHz PCI or PCI-X cards with 3.3 volt universal signaling
- Also accepts PCI-E x8 cards (using a PCI-E riser)
- 9 inch maximum length
- 25 Watt maximum power consumption

Slot 2:

- Accepts PCI-Express x8 cards (using a PCI-E riser)
- 6.6 inch maximum length
- 25 Watt maximum power consumption

To install a card, you first insert it into a matching riser, and then install the riser into the slot. The type of card you can install depends on the riser you use:

- A PCI-E riser can go in either slot, and accepts only PCI-E cards
- A PCI-X riser can go in slot 1, and accepts only PCI-X cards

Tools

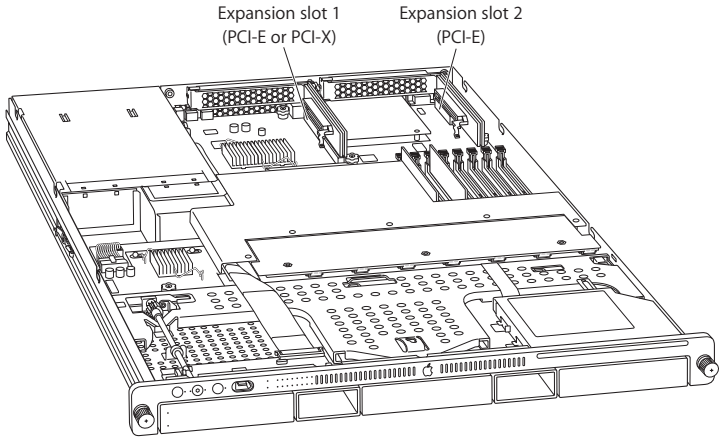
The only tool required for this procedure is a Phillips #1 screwdriver.

Preliminary Steps

Before you begin, open the Xserve and place the bottom housing on a sturdy, flat surface.

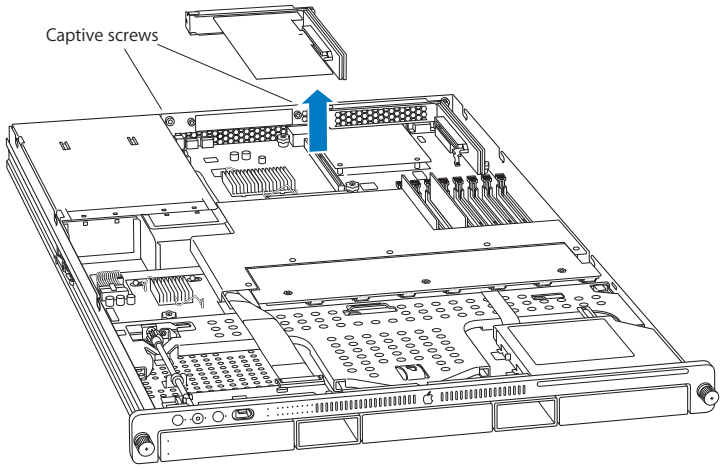
Important: Be sure the Xserve is turned off and unplugged before you install or remove an expansion card or riser.

Part Location



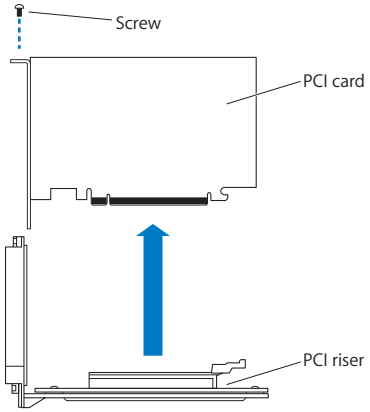
Procedure

1. Loosen the two captive screws that secure the riser bracket to the back panel.
2. Carefully pull up on the bracket and riser, with the expansion card still attached, to disconnect the riser from the logic board.



3. Tilt the expansion card up so that its port clears the enclosure, and remove the card from the Xserve.

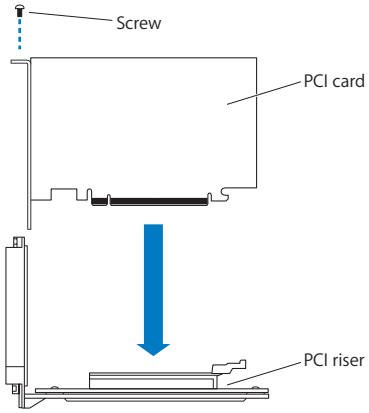
4. Remove the screw that secures the expansion card to the riser, and separate the card and riser by gently pulling them apart.



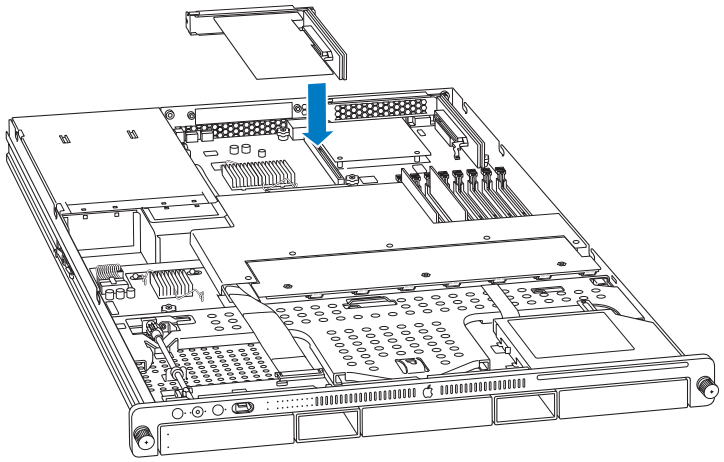
WARNING: When removing or installing an expansion card, handle it only by the edges. Do not touch its connectors or any of the components on the card. Lift the card straight out from the connector to remove it, and insert it straight into the connector to install it. Do not rock the card from side to side and don't force the card into the slot. Once the replacement card is installed, pull on it gently to check that it is properly connected.

Replacement Procedure

1. Seat the expansion card in the riser slot and replace the screw to secure the card in the riser.



2. Align the riser with the slot on the logic board and press to seat the card.



3. Tighten the captive screws that secure the riser bracket to the back panel.
4. Return the Xserve to the rack and start it up.
5. Configure the card.
   - To configure an Ethernet card, open the Network pane of System Preferences.
   - To configure a Fibre Channel card, open Fibre Channel Utility.
   - To configure a SCSI card, open Disk Utility.

Battery

The Xserve (Late 2006) uses a CR 2032 Lithium coin cell battery to preserve settings such as the date and time when the system is not connected to power. If the date and time change unexpectedly or other system settings are lost, you might need to replace the battery.

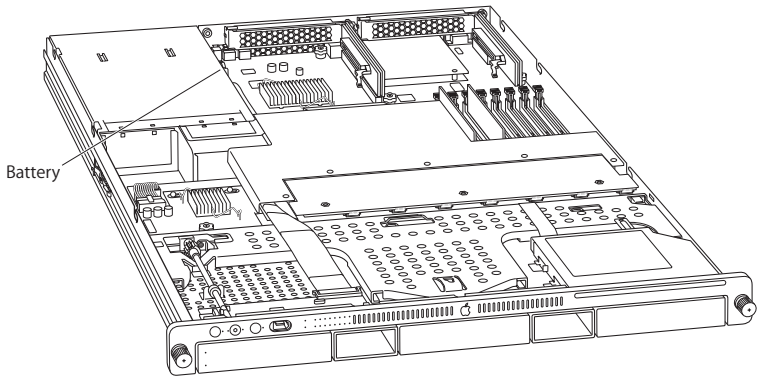
Tools

No tools are required for this procedure. You may, however, find a small plastic pry tool useful in prying up the battery in step 1 below.

Preliminary Steps

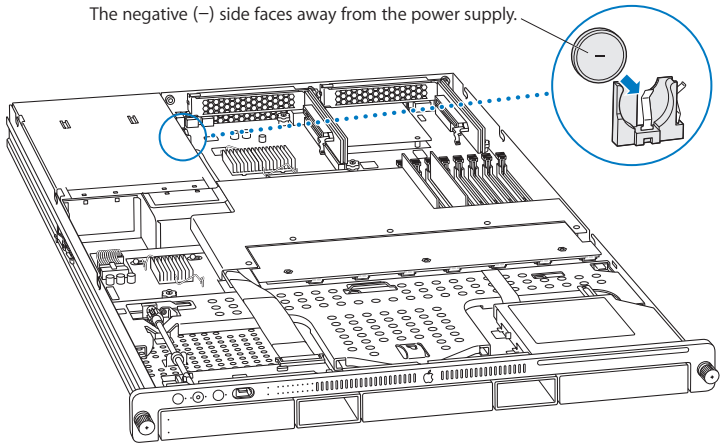
Before you begin, open the Xserve and place the bottom housing on a sturdy, flat surface.

Part Location



Procedure

1. Remove the left riser card and any installed expansion card in slot 1 if it blocks access to the battery holder.
2. Remove the old battery from the holder.
   Note: You may first need to carefully spread the two tabs on the holder slightly apart to release the battery.
   Warning: To avoid risk of explosion, replace battery only with type CR2032.
3. Insert the new battery in the holder with the positive side (+) facing the power supply, and the negative side facing toward the center of the Xserve.



4. If you removed a riser card and/or an expansion card, replace it.
5. Close the Xserve and return it to the rack.

Important: Dispose of the old battery according to the manufacturer's instructions and your local environmental laws.

Optical Drive

Note: Although some of the illustrations for this procedure are based on Xserve G5, the procedure is the same for Xserve (Late 2006).

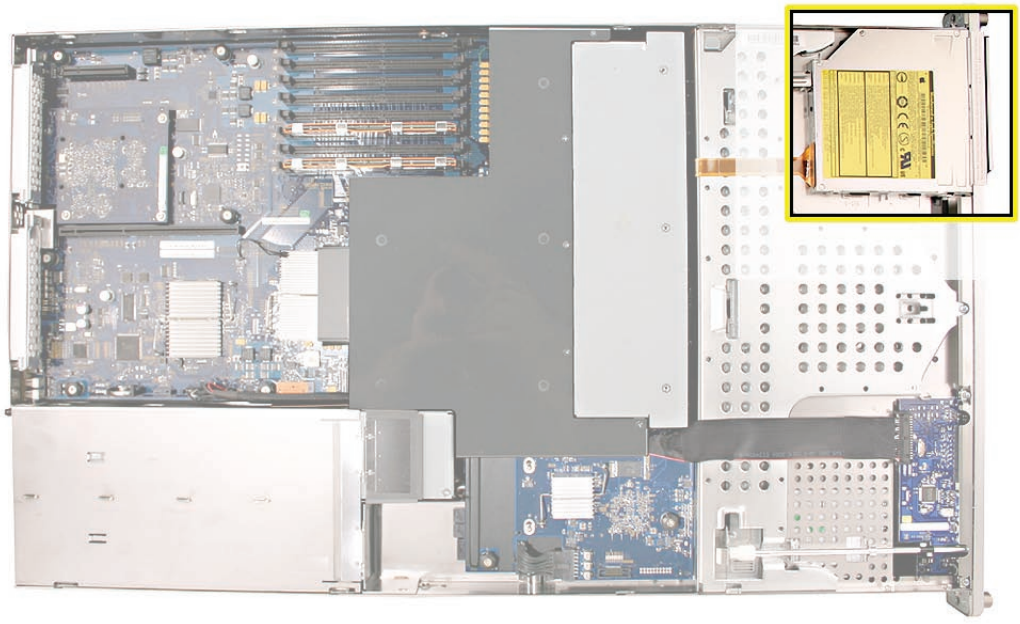
Tools

The only tool required for this procedure is a jeweler's Phillips (#0) screwdriver.

Preliminary Steps

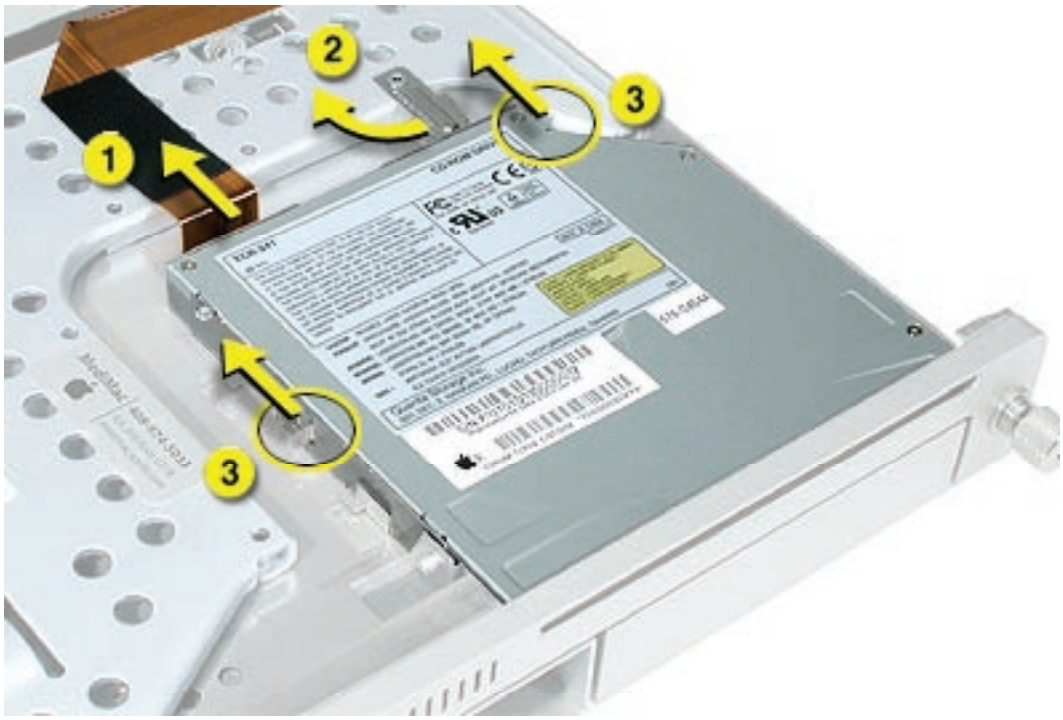
Before you begin, open the Xserve and place the bottom housing on a sturdy, flat surface.

Part Location



Procedure

1. Disconnect the optical drive cable from the optical drive.
2. Rotate the optical drive clip clockwise to release it.
3. Placing your thumbs on the tab on either side of the drive, carefully slide the drive back from the front bezel.
   Important: When removing or replacing the optical drive, be careful not to put pressure on the top of the drive or the top of the front bezel that covers the optical drive slot.



4. LIft the drive out of the server.

Replacement Note: Before installing the replacement drive, you must transfer the side brackets and the screws from the original drive to the replacement drive.

5. Remove the mounting screw for the left bracket and transfer the bracket to the new drive, using the same screw to secure it.
6. Remove the three mounting screws for the right bracket and transfer the bracket to the new drive, again using the same screws to secure it.

Airflow Duct

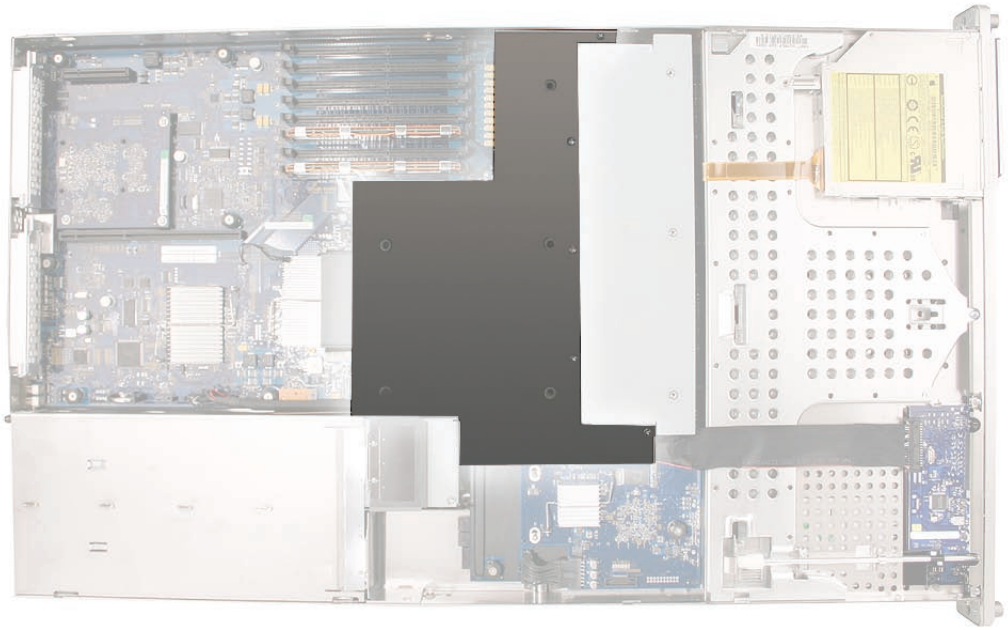
Tools

The only tool required for this procedure is a Phillips #1 screwdriver

Preliminary Steps

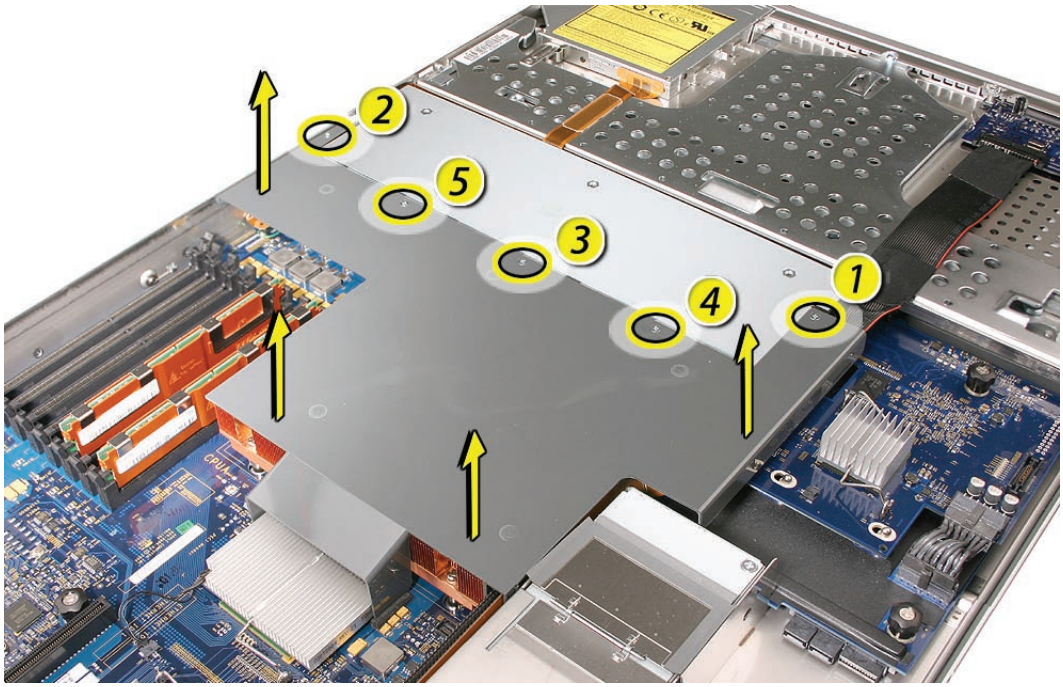
Before you begin, open the Xserve and place the bottom housing on a sturdy, flat surface.

Part Location

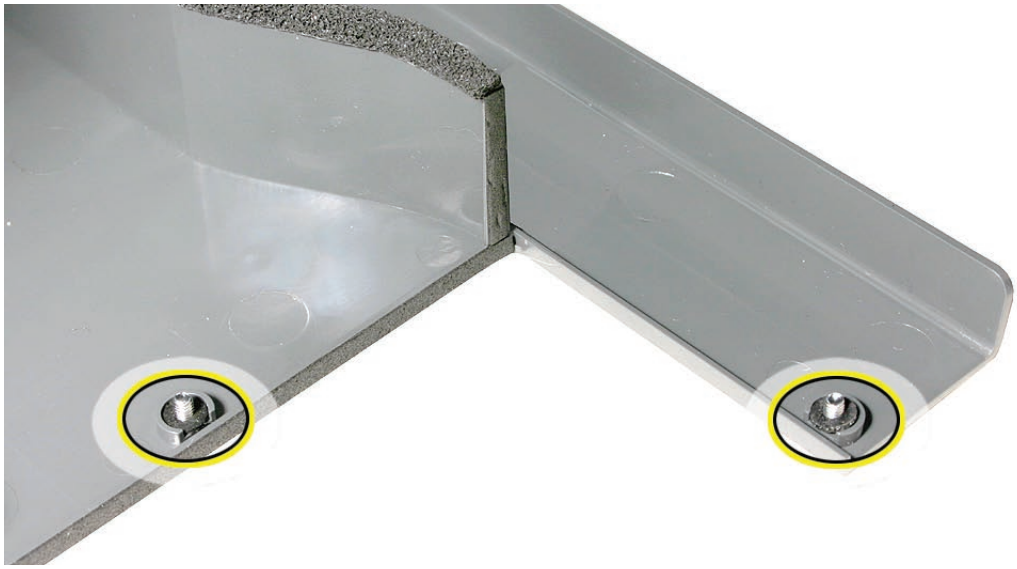


Procedure

1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.

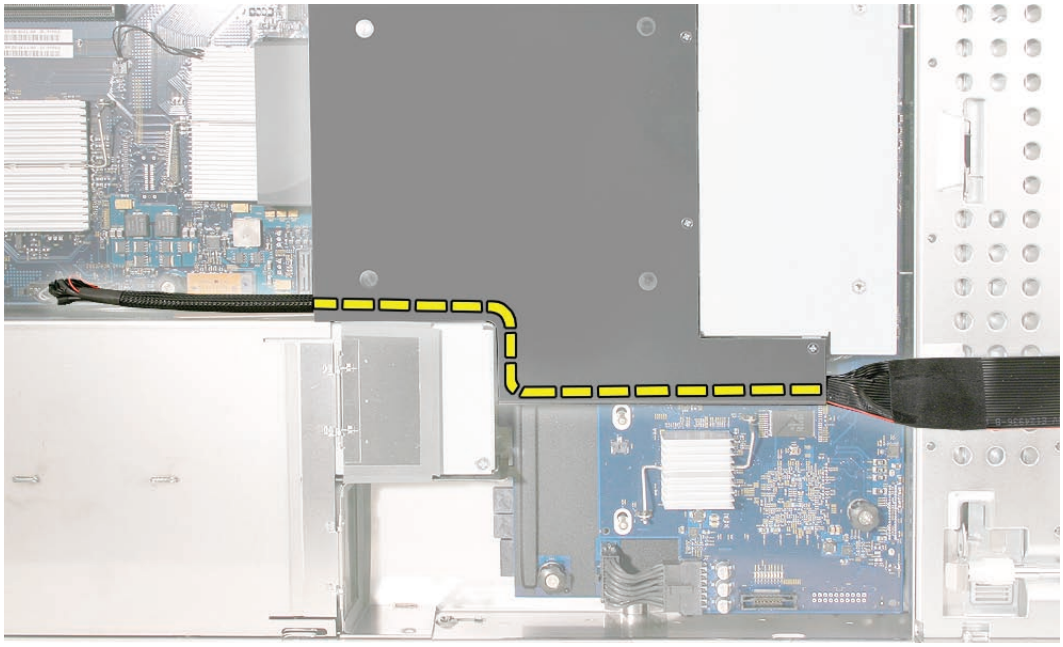


Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these rubber washers can easily fall into the enclosure and become lost.

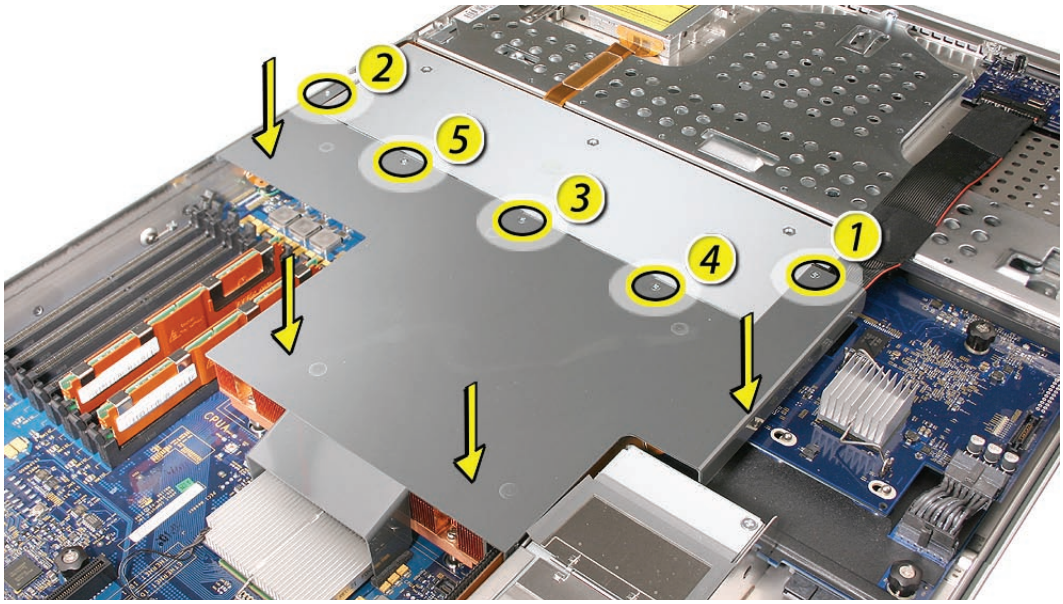


Replacement notes:

- When installing the airflow duct, be sure to route both the front panel cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.



- Ensure the airflow duct fits flush all over, and does not protrude above the level of the enclosure.
- Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.
- Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighen the screws.



Fan Array

Tools

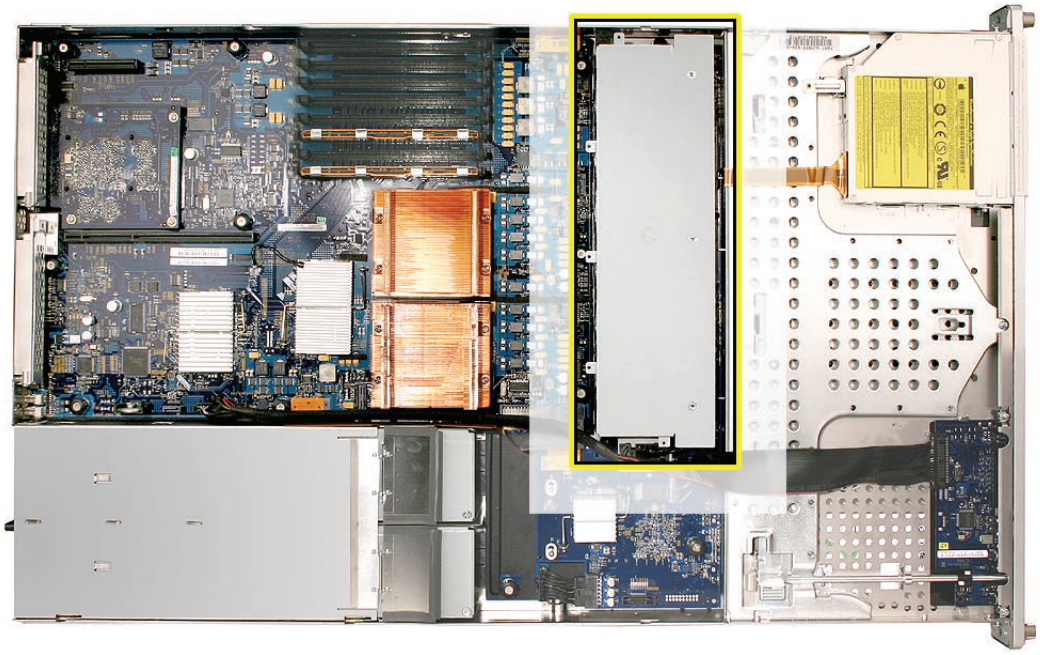
No tools are required for this procedure. You may, however, find a Phillips screwdriver useful in releasing the thumbscrews in step 1 below.

Preliminary Steps

Before you begin, do the following:

- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove the airflow duct.

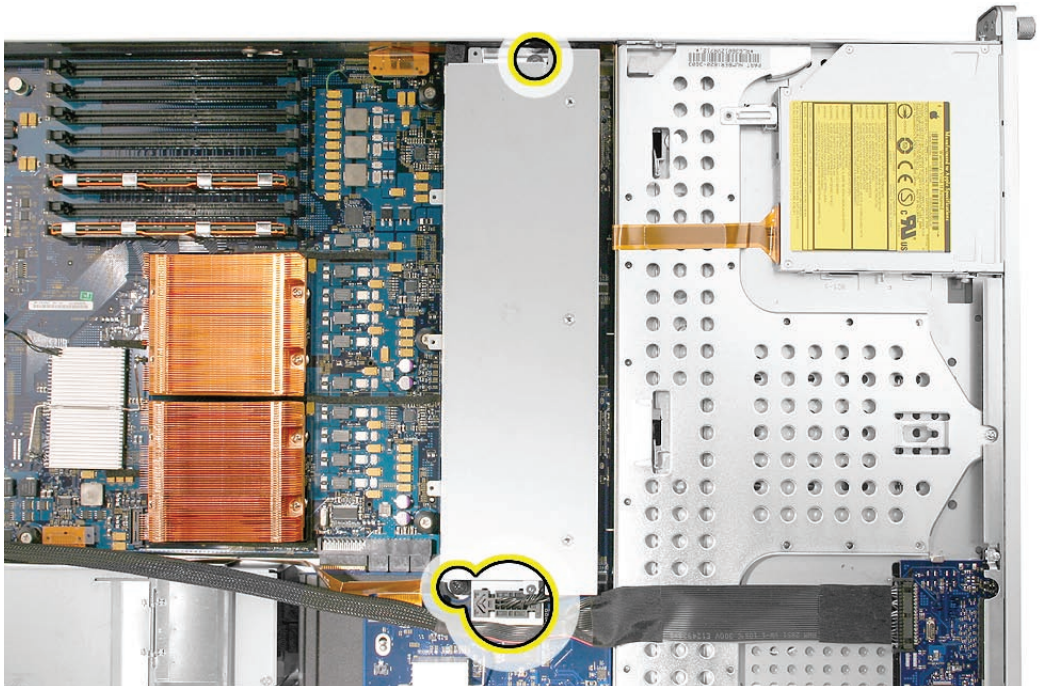
Part Location



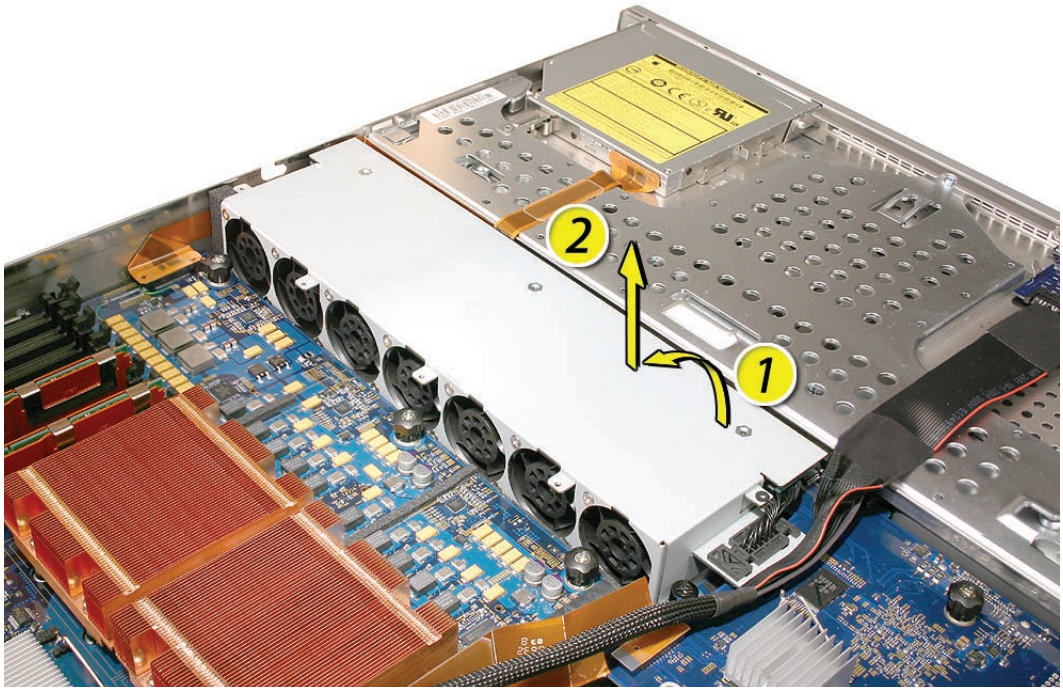
Procedure

1. Loosen the two thumbscrews that secure the fan array to the enclosure.
   Note: The thumbscrews are captive; you cannot remove them.

2. Lift the fan array to remove it from the Xserve.
   Note: You may need to move the front panel cable slightly out of the way of the fan array power connector during removal or replacement. Be careful not to pinch the front panel board cable between the fan array and any other surface inside.



Note: You may encounter some resistance around the fan array power connector during removal. You should carefully rotate the fan array as shown to disconnect it from the power distribution board below, and then lift the fan array out of the computer.



Replacement Note: Push down on the fan array power connector to seat it when installing the fan array.

Front Panel Board Cable

Tools

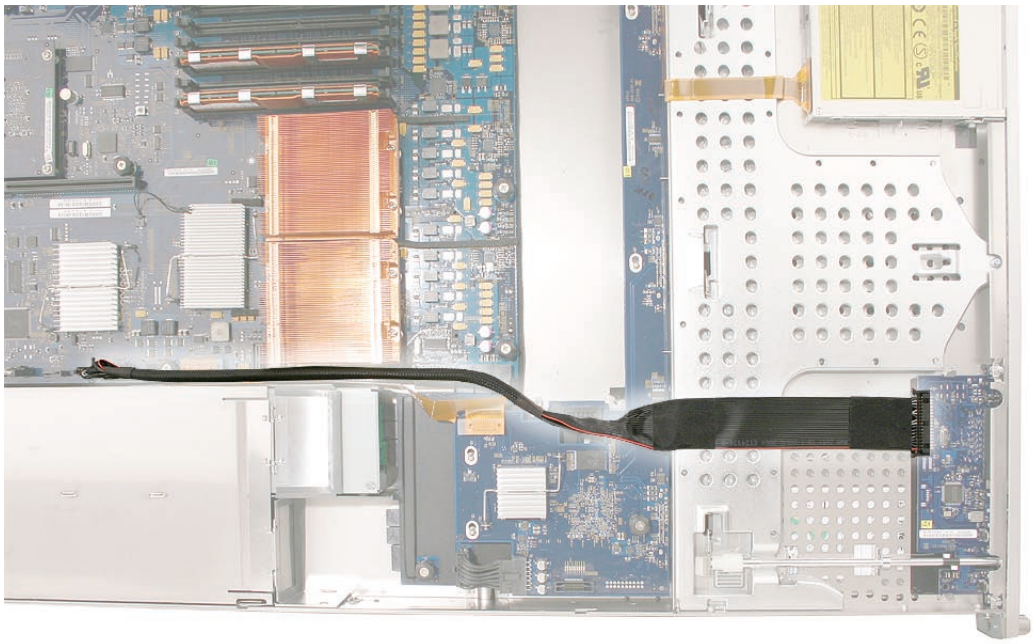
No tools are required for this procedure.

Preliminary Steps

Before you begin, do the following:

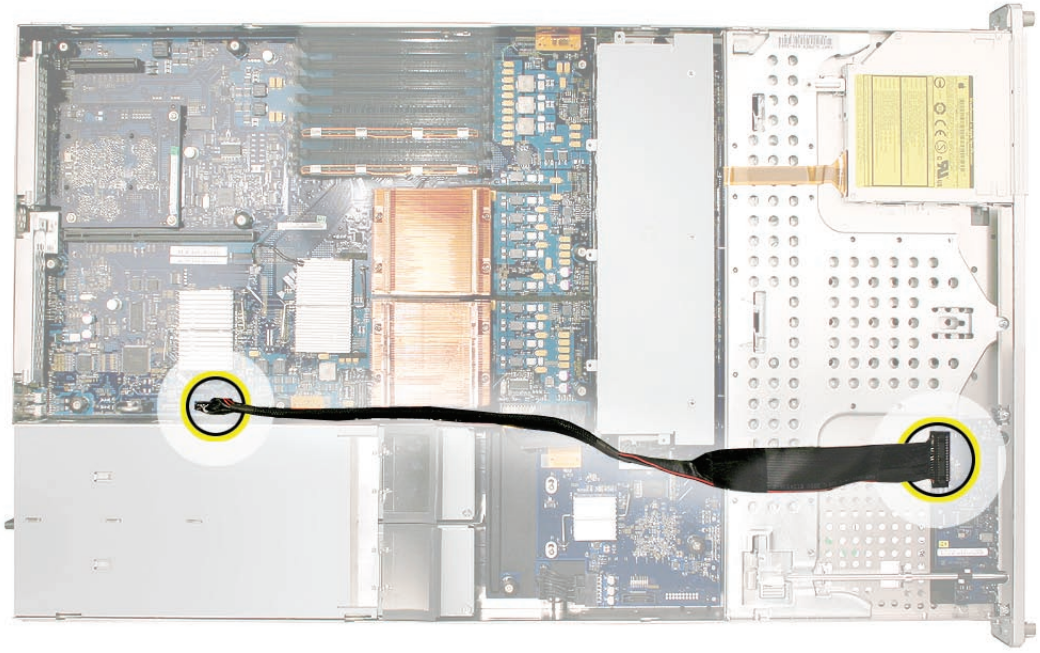
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove the airflow duct.
- Remove the left PCI riser card and any expansion card in slot 1.

Part Location



Procedure

1. Release the locking levers on the cable connectors and disconnect the front panel board cable from the front panel board and the logic board.



2. Remove the cable from the Xserve.

Backplane-to-Logic Board I/O Cable

Tools

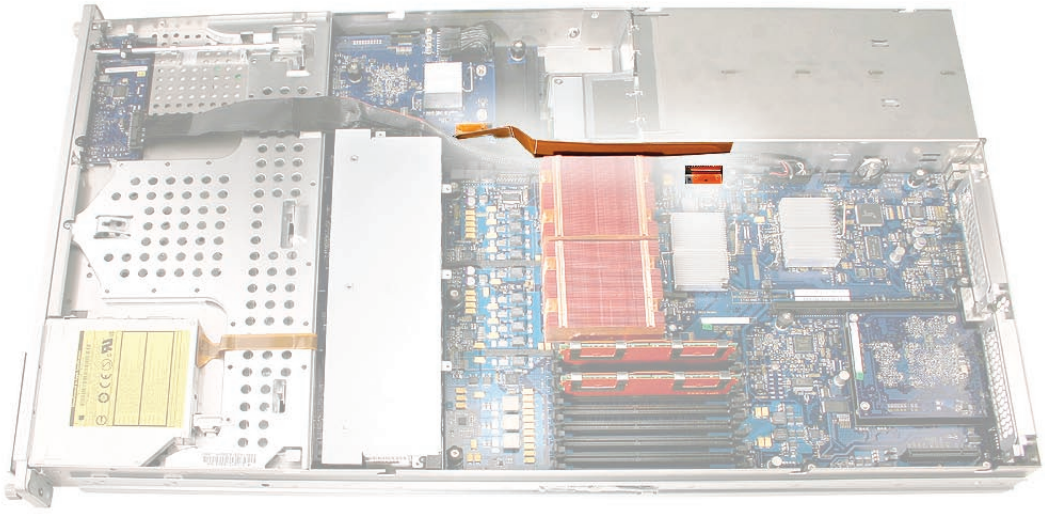
No tools are required for this procedure.

Preliminary Steps

Before you begin, do the following:

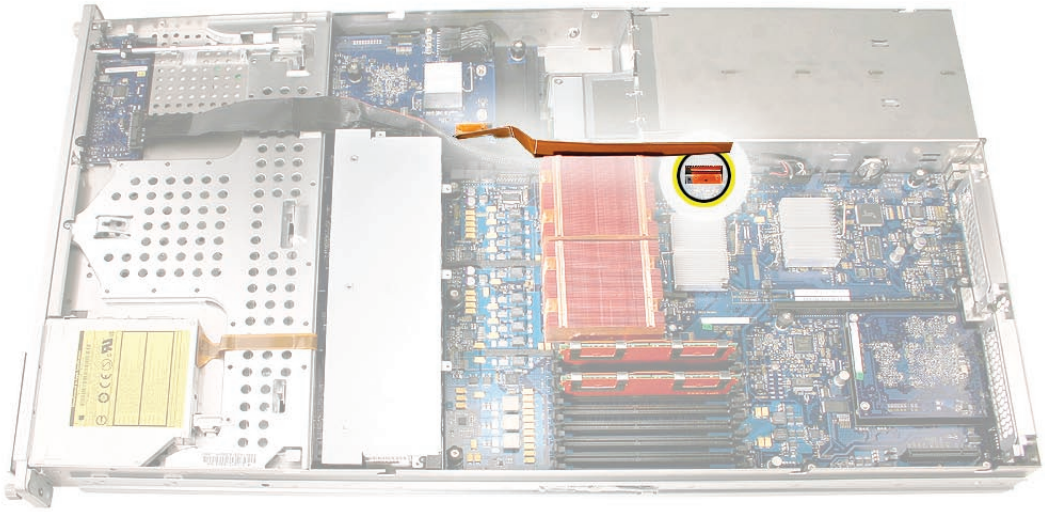
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove the airflow duct.

Part Location

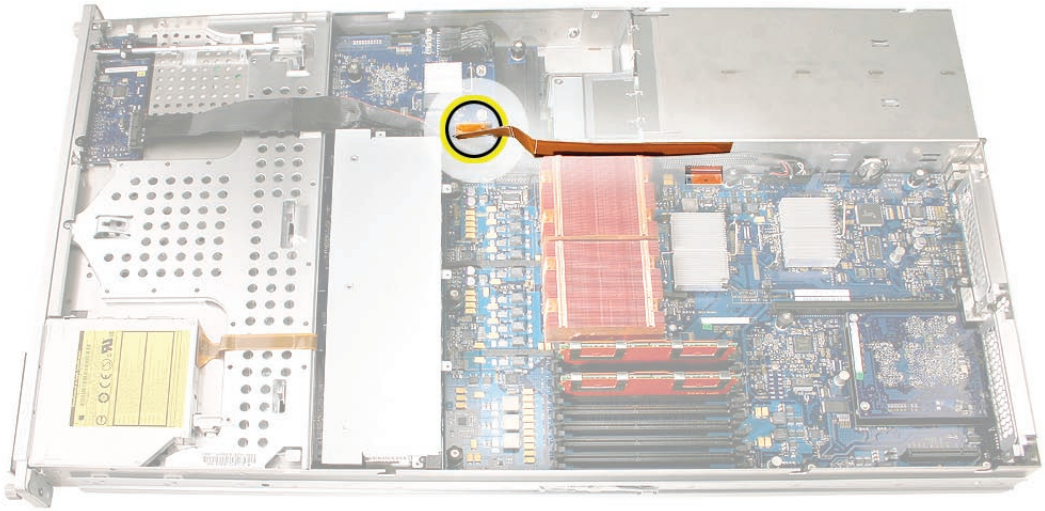


Procedure

1. Disconnect the backplane-to-logic board cable from the logic board.



2. Disconnect the backplane-to-logic board cable from the drive interconnect backplane and remove the cable from the Xserve.



Optical Drive Cable

Tools

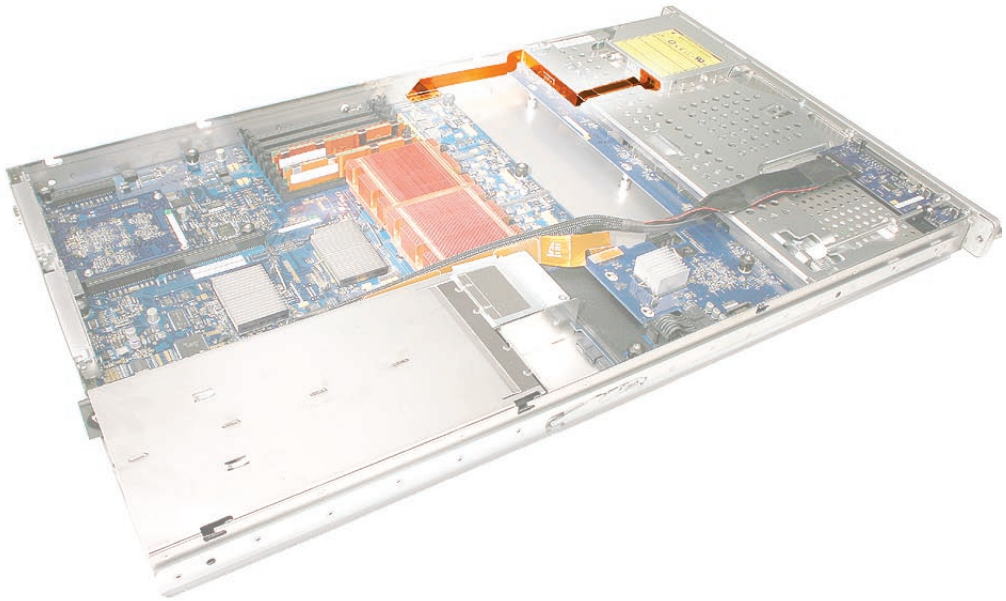
No tools are required for this procedure.

Preliminary Steps

Before you begin, do the following:

- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove the airflow duct
- Remove the fan array

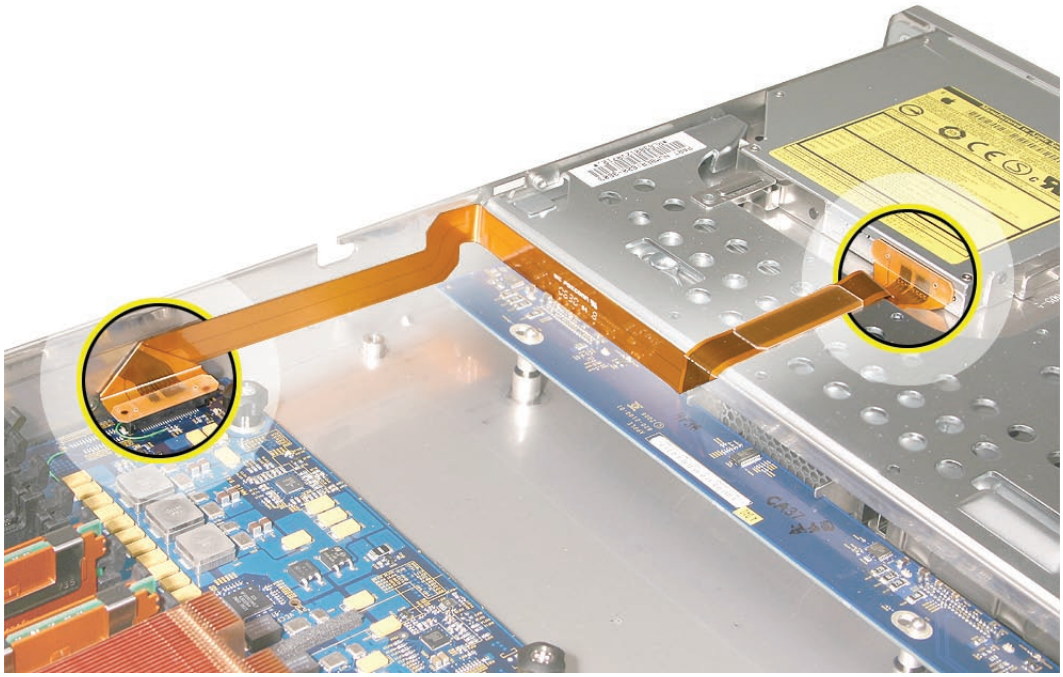
Part Location



Procedure

Warning: The optical drive cable is attached to the enclosure with adhesive on the underside of the cable.

1. Disconnect the optical drive cable from the optical drive.
2. Disconnect the optical drive cable from the logic board.



3. Carefully pry the cable's adhesive from the enclosure and remove the cable from the Xserve.

Locking Mechanism Rod

Note: Although some of the illustrations for this procedure are based on Xserve G5, the procedure is the same for Xserve (Late 2006).

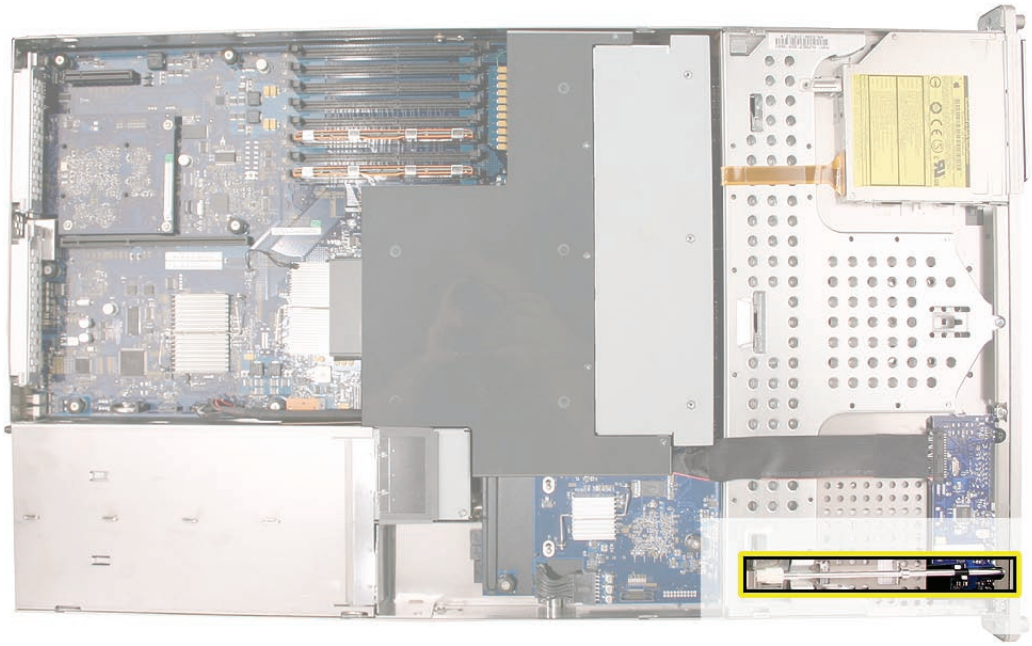
Tools

No tools are required for this procedure.

Preliminary Steps

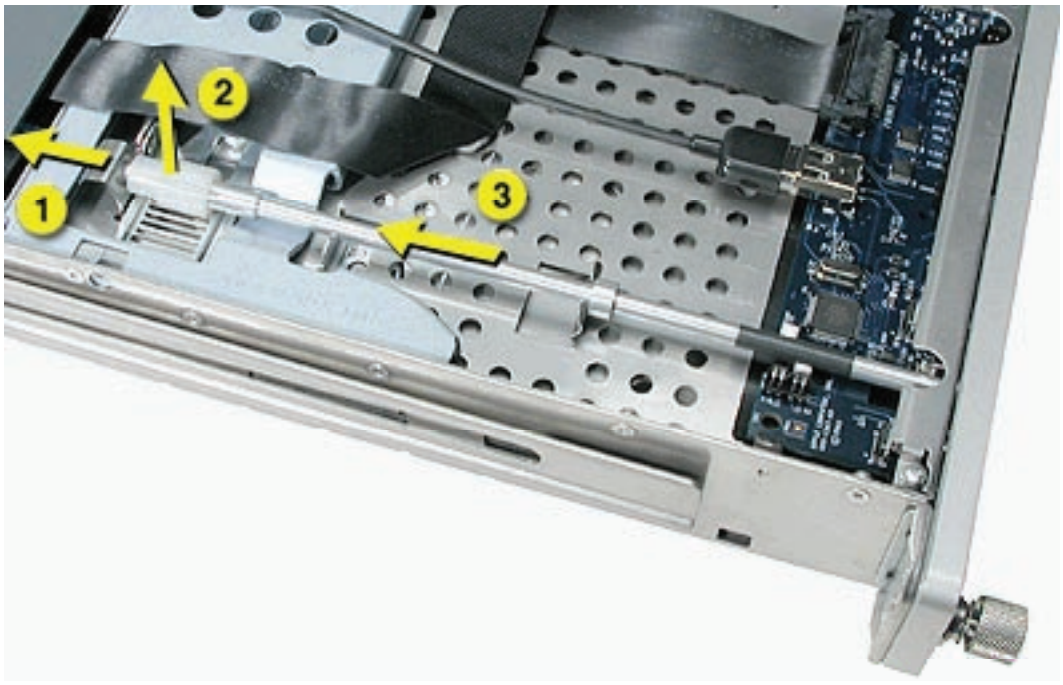
Before you begin, open the Xserve and place the bottom housing on a sturdy, flat surface.

Part Location



Procedure

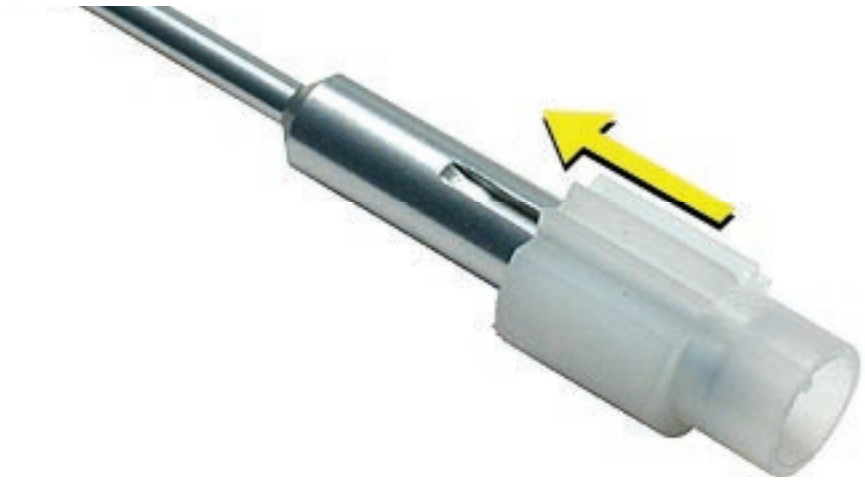
1. Pull back the latch to release the gear end of the locking mechanism rod.
2. Tilt up the gear end of the rod and remove the rod from the server.



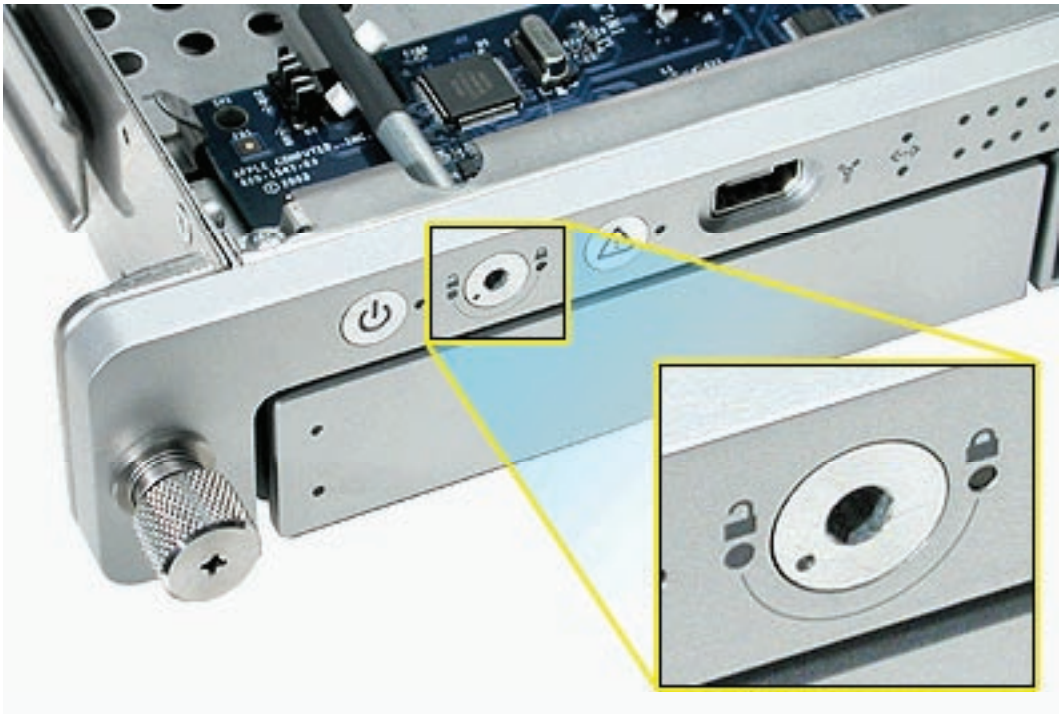
3. If you are replacing the plastic gear on the end of the rod, slide the gear off the rod.

Replacement Procedure

1. To install the gear, slide it onto the notched end of the locking rod, aligning the narrow end of the gear with the end of the rod.
   Note: Make sure the rib inside the gear engages with the notch in the rod.



2. To install the locking rod, insert the key-hole end of the rod into the port on the front bezel.
Note: Make sure the small circle on the front of the rod points to the left. It should align with the "unlocked" symbol on the bezel.



Front Bezel Assembly

Note: Although the illustrations for this procedure are based on Xserve G5, the procedure is the same for Xserve (Late 2006).

Tools

The only tool required for this procedure is a Phillips screwdriver.

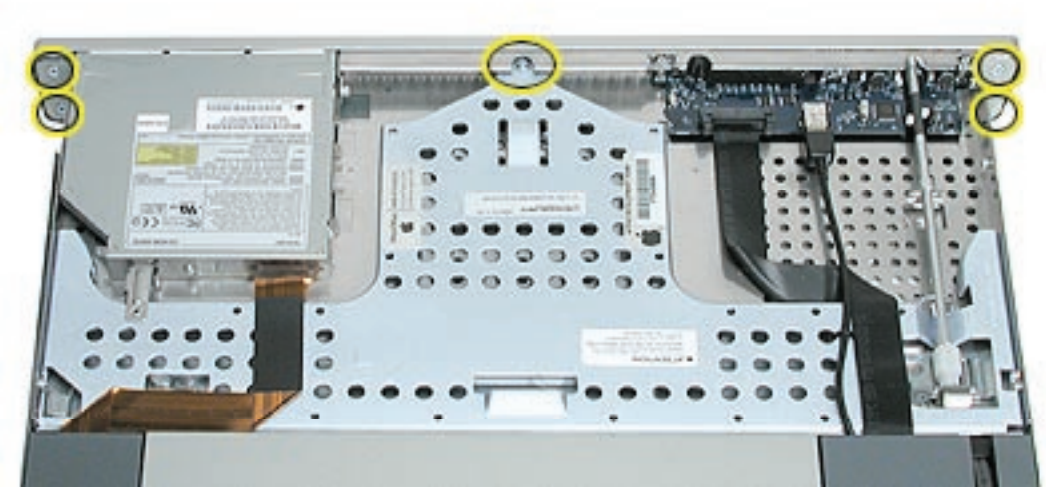
Preliminary Steps

Before you begin, open the Xserve and place the bottom housing on a sturdy, flat surface.

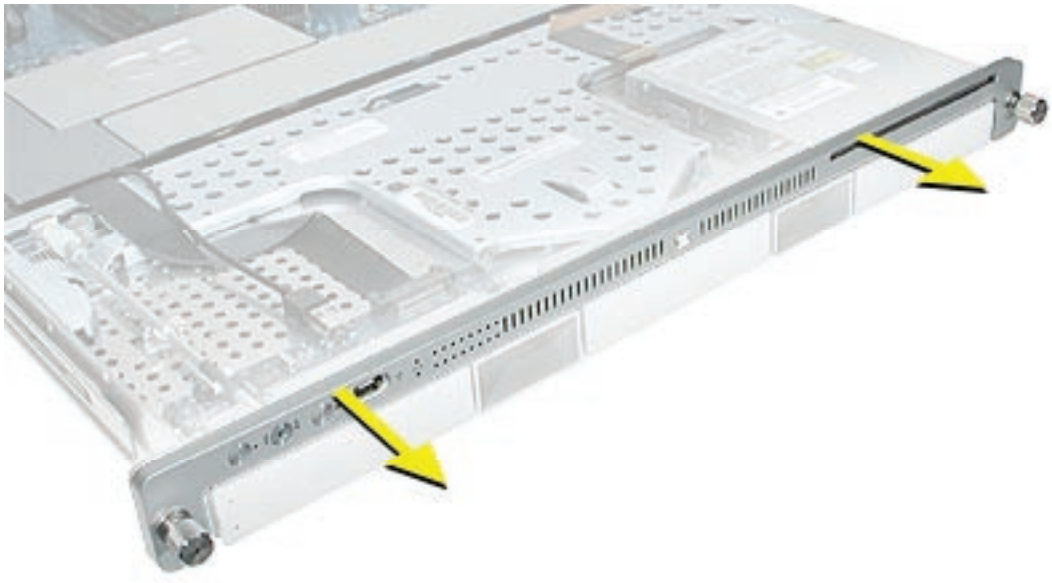
Part Location

Procedure

1. Using a Phillips screwdriver, remove the screws that attach the two front bezel brackets to the server, and remove the brackets.
2. Remove the screw that attaches the top of the bezel to the server.

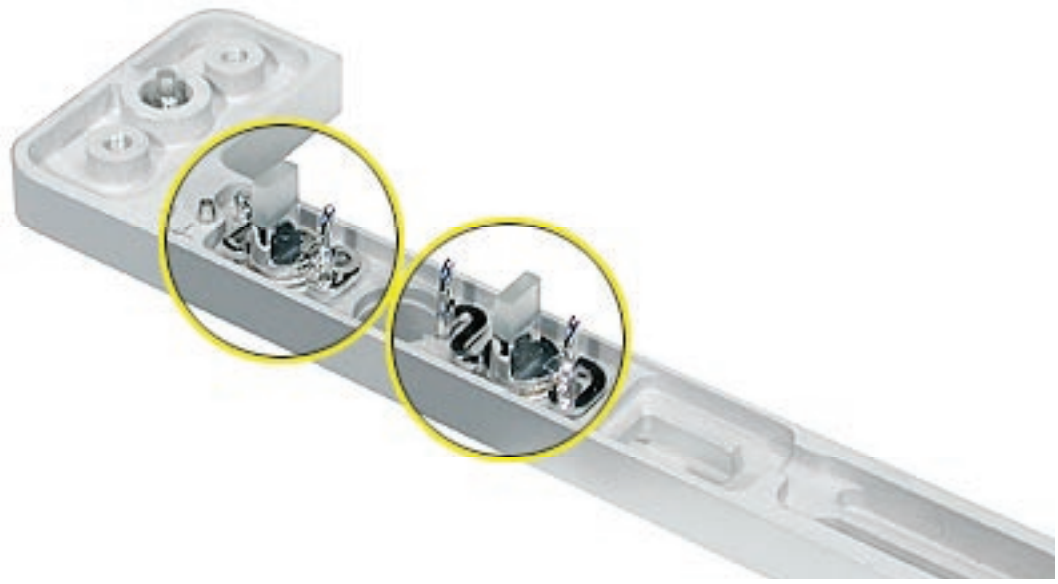


3. Gently pull the front bezel forward and remove it from the server.
   Important: When removing or replacing the bezel, be careful not to put pressure on the top of the bezel over the optical drive slot.



Replacement Procedure

1. Transfer the system identifier and power buttons from the original front bezel to the replacement bezel.



2. Position the light pipes in the light pipe assembly into the double row of light pipe holes in the front bezel.

3. Replace the front bezel on the server, matching ports/projections with openings.
4. Replace the screw that secures the top of the bezel to the server.
5. Replace the two bezel brackets and their mounting screws.

Front Panel Buttons

Note: This procedure explains how to remove the power and system ID buttons from the front bezel.

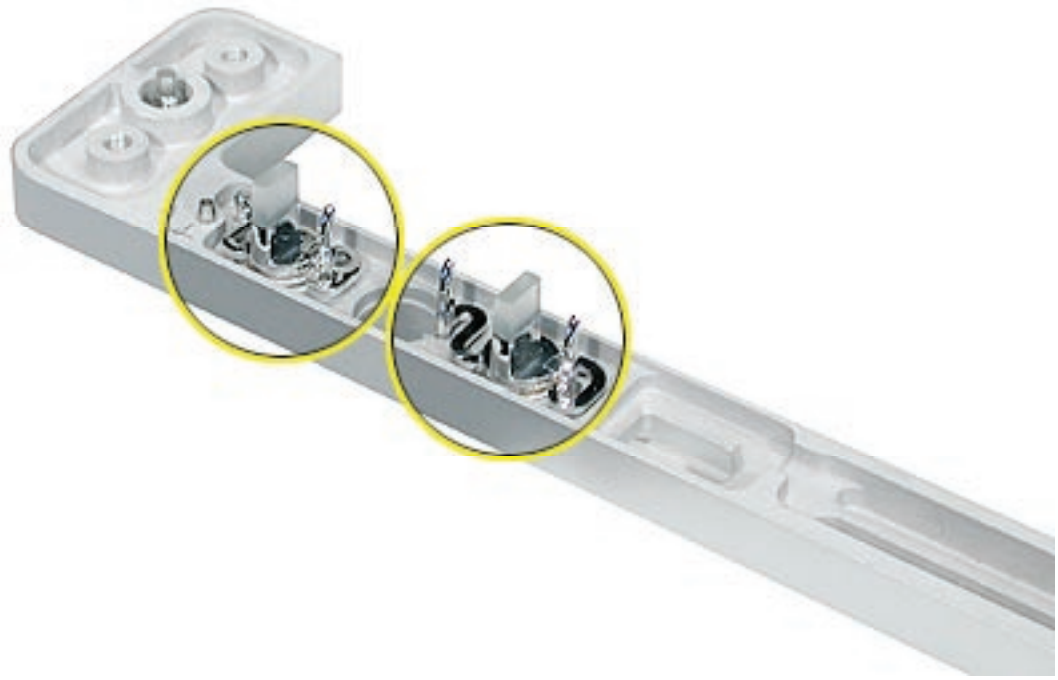
Tools

The only tool required for this procedure is a Phillips screwdriver.

Preliminary Steps

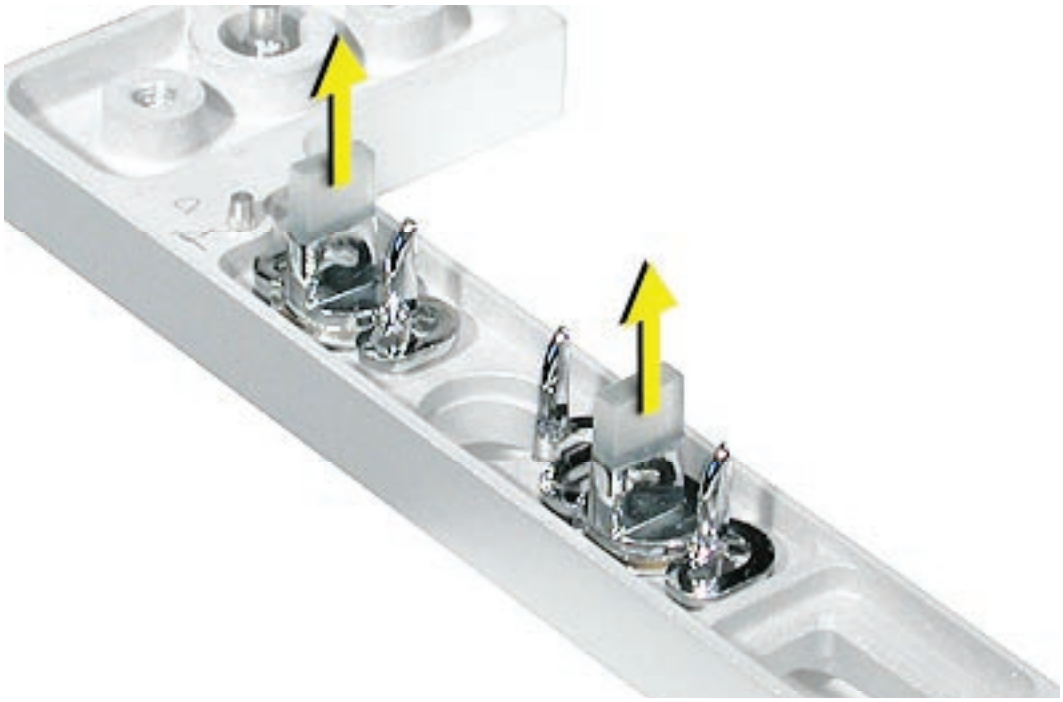
Before you begin, open the Xserve; place the bottom housing on a sturdy, flat surface; and remove the front bezel assembly.

Part Location



Procedure

1. Holding the power button by the plastic tab, lift straight up and remove the button from the front bezel.
2. Repeat for the system ID button.
   Note: Take care in handling the buttons. The face of each button is loosely attached to the button LEDs and can easily separate.



Replacement Note: Position the replacement buttons in the front bezel as illustrated.

Light Pipe

Note: Although the illustrations for this procedure are based on Xserve G5, the procedure is the same for Xserve (Late 2006).

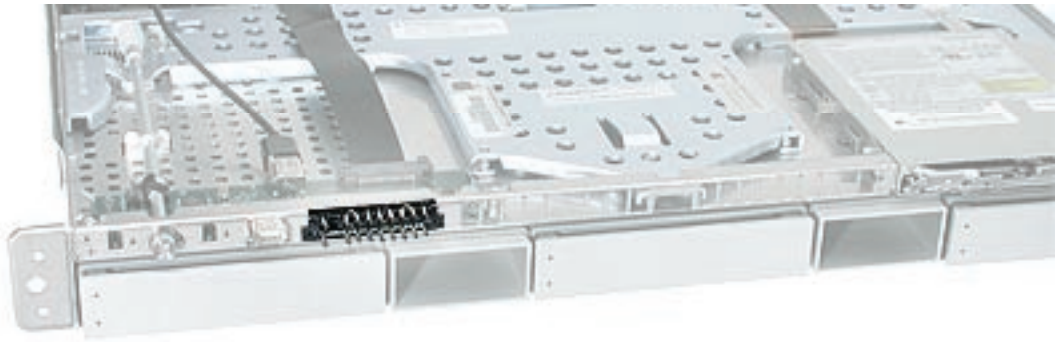
Tools

The only tool required for this procedure is a Phillips screwdriver.

Preliminary Steps

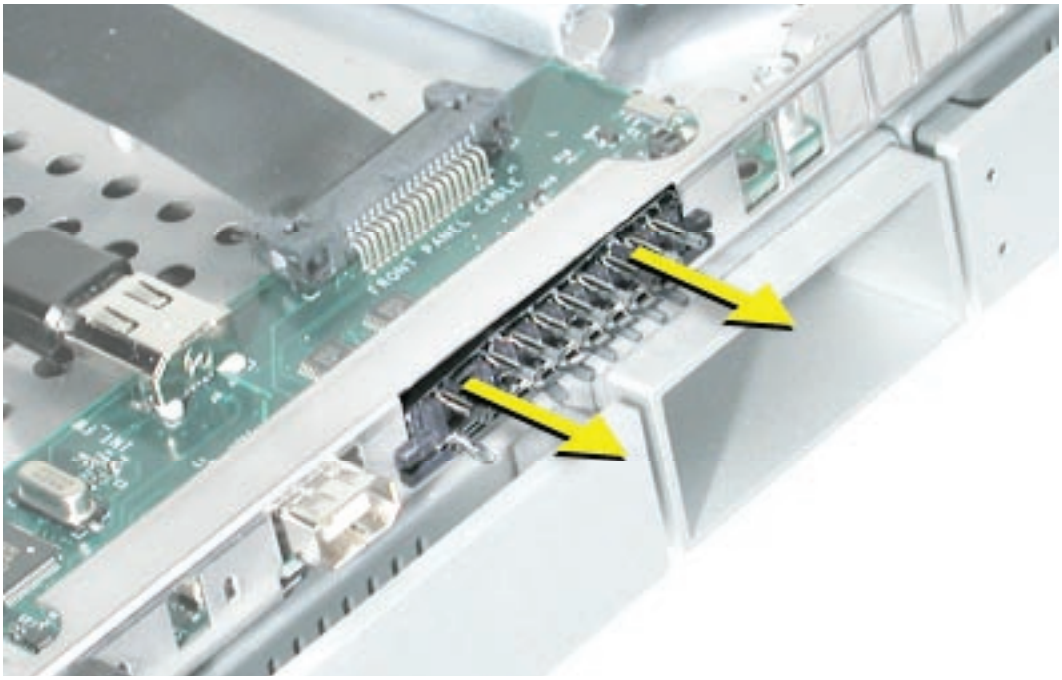
Before you begin, open the Xserve; place the bottom housing on a sturdy, flat surface; and remove the front bezel assembly.

Part Location



Procedure

1. Ease first one side and then the other side of the light pipe assembly from its opening in the front of the enclosure.
2. Remove the light pipe assembly from the server.



Replacement Procedure

1. Position the light pipes in the replacement light pipe assembly into the double row of light pipe holes in the front bezel.

2. Replace the front bezel on the server, matching ports/projections with openings.
3. Replace the screw that secures the top of the bezel to the server.
4. Replace the two bezel brackets and their mounting screws.

Front Panel Board

Tools

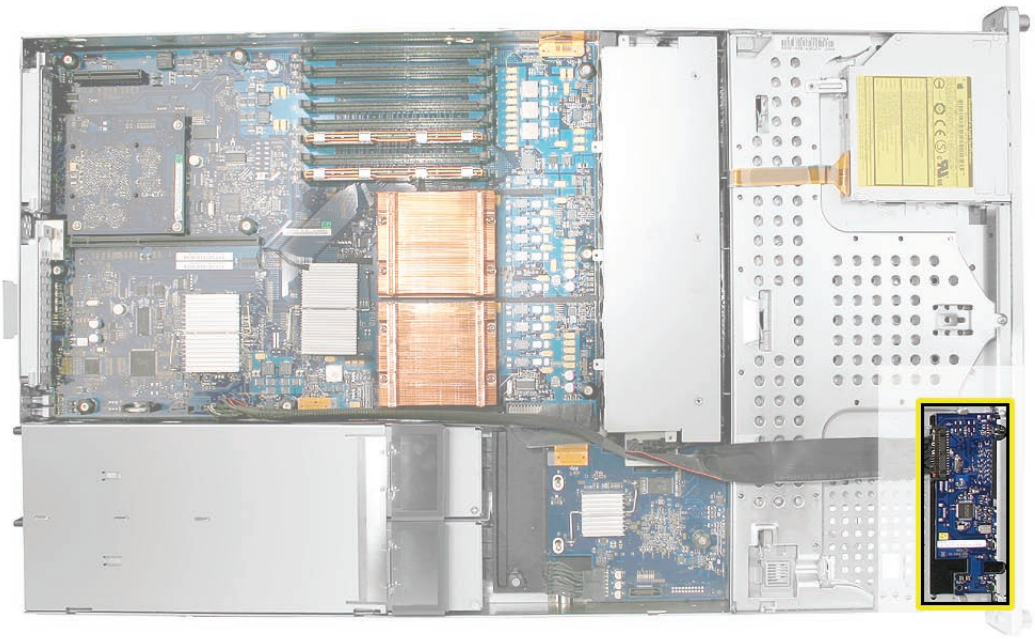
The only tool required for this procedure is a Phillips #1 screwdriver.

Preliminary Steps

Before you begin, do the following:

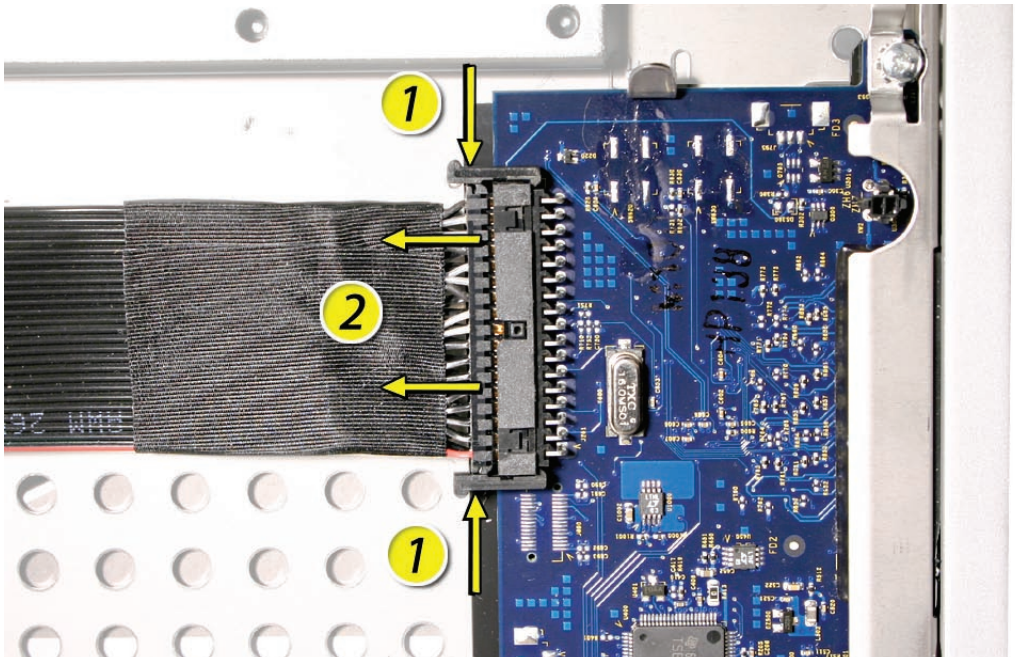
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove the locking mechanism rod.

Part Location

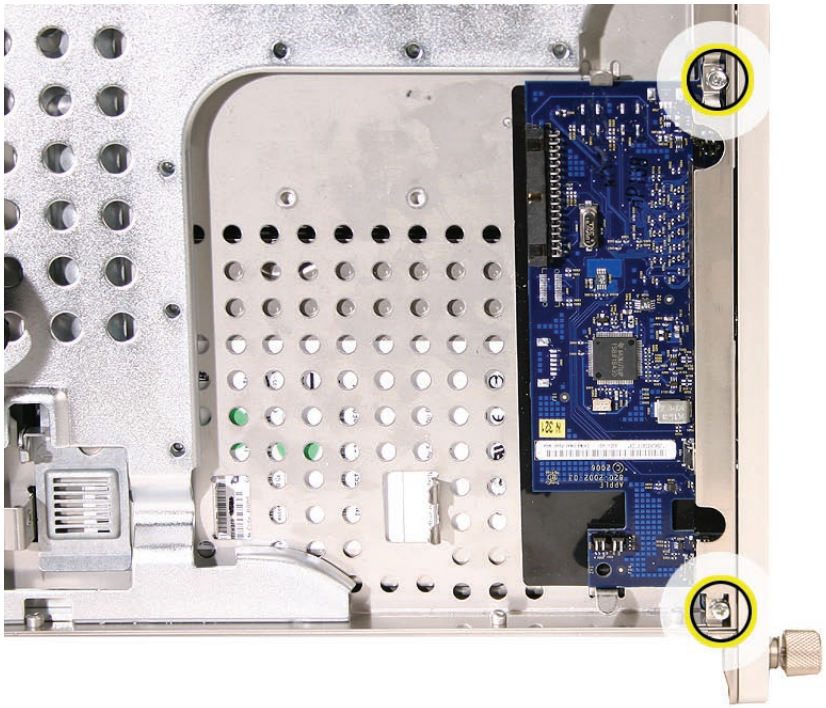


Procedure

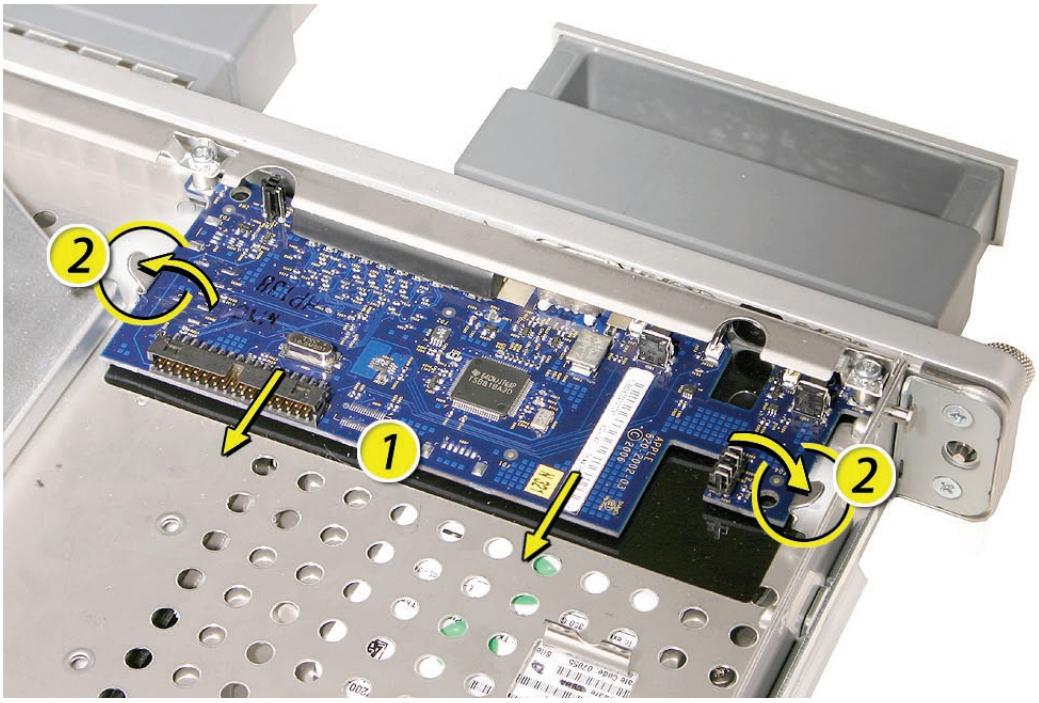
1. Release the two locking levers on the front panel board cable connector and disconnect the cable from the front panel board.



2. Remove the two Phillips screws that mount the front panel board to the chassis.



3. Slide the board back slightly and release the two clips on either side of it.



4. Tilt the board up and remove it from the Xserve.

Important: When replacing the front panel board, make sure the board slides under the black plastic cover of the light pipe.

Drive Interconnect Backplane

Tools

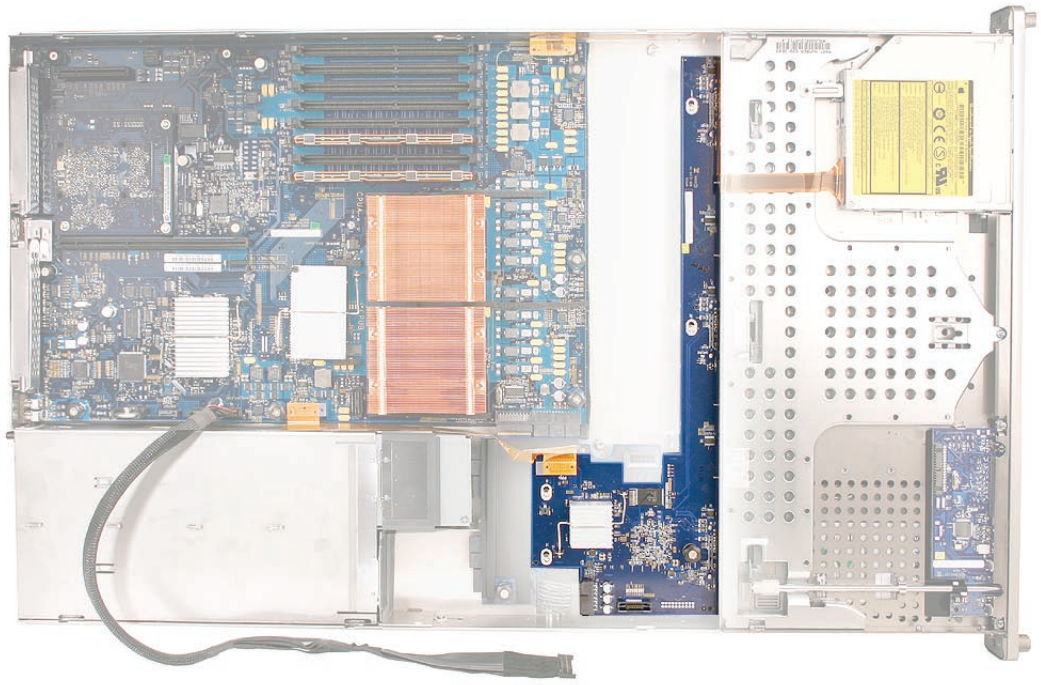
No tools are required for this procedure. You may, however, find a Phillips screwdriver useful in releasing the thumbscrew in step 3 below.

Preliminary Steps

Before you begin, do the following:

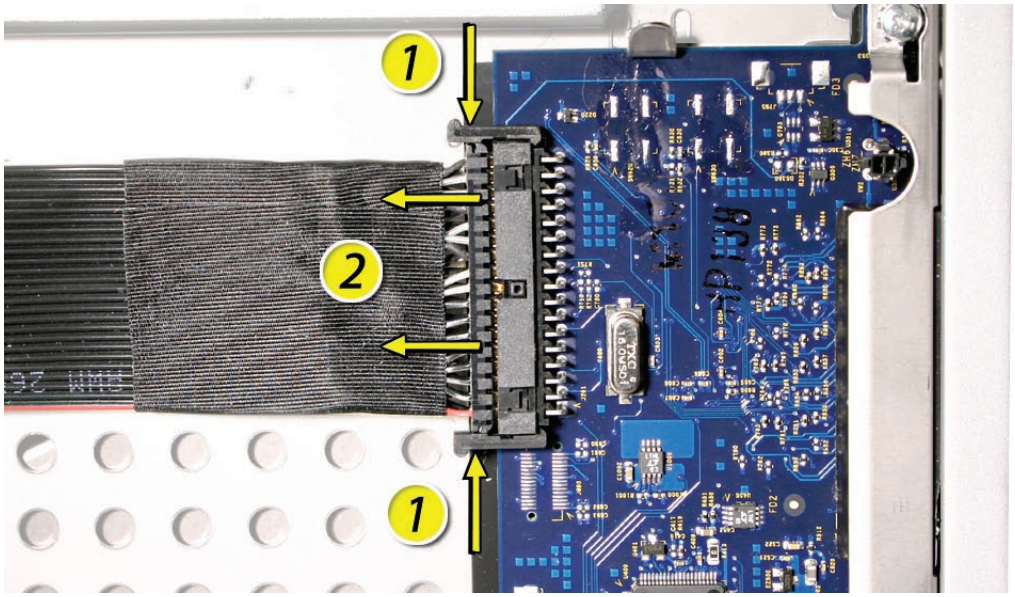
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove all Apple drive modules.
- Remove the airflow duct.
- Remove the fan array.
- Remove the power distribution board cable.

Part Location

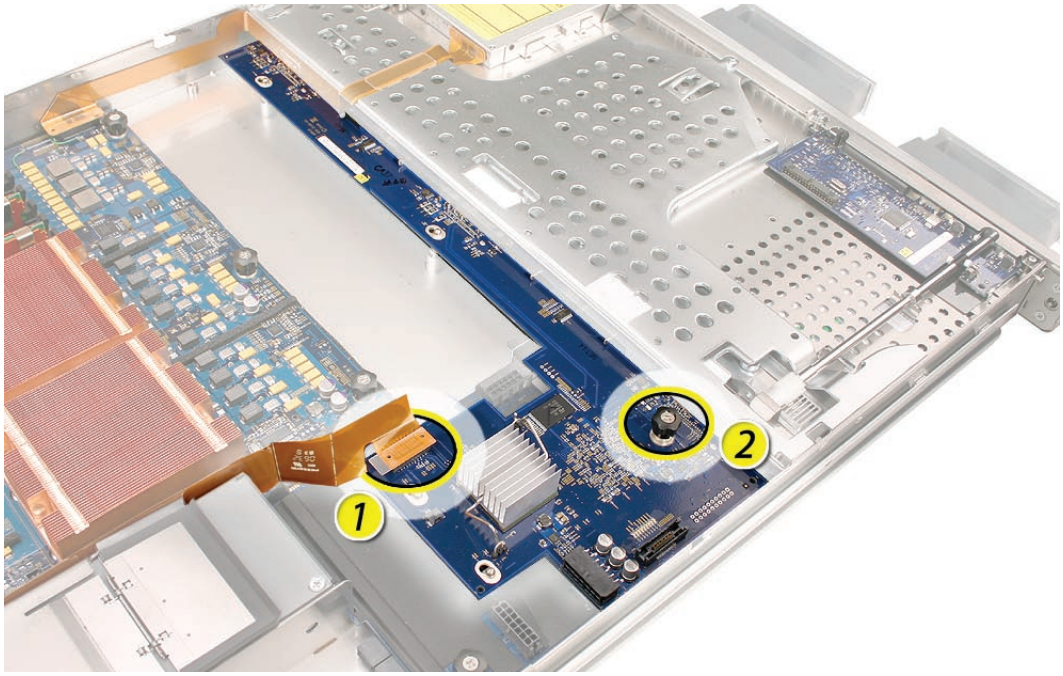


Procedure

1. Release the two locking levers on the front panel board cable connector and disconnect the cable from the front panel board. Move the front panel board cable out of the way.

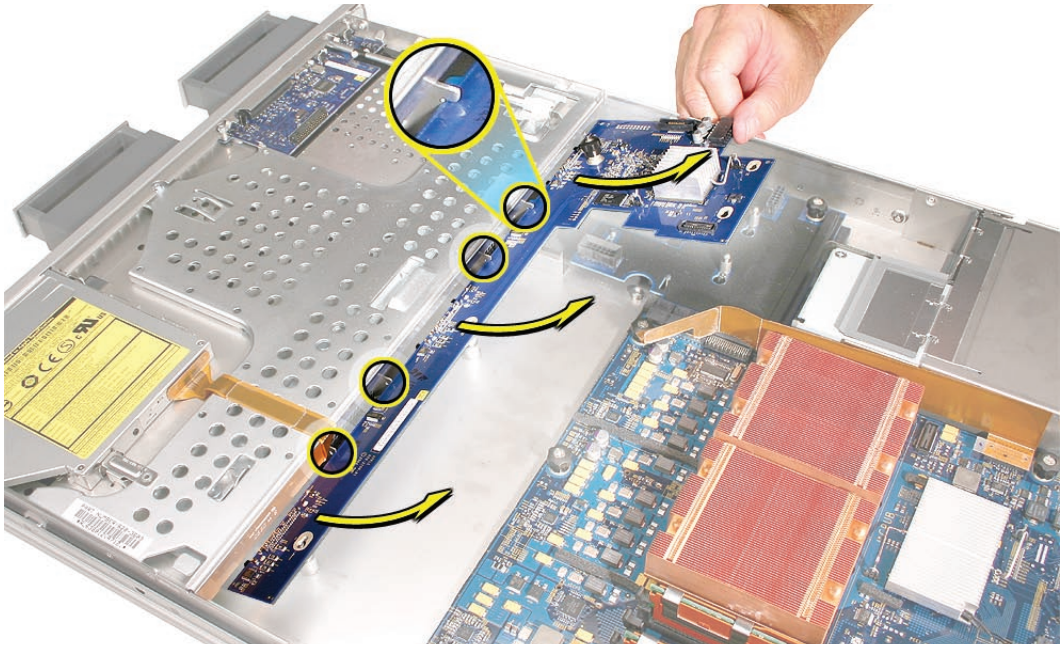


2. Disconnect the backplane-to-logic board I/O cable from the backplane.
3. Release the thumbscrew that secures the backplane to the enclosure.
   Note: The thumbscrew is captive; you cannot remove it.

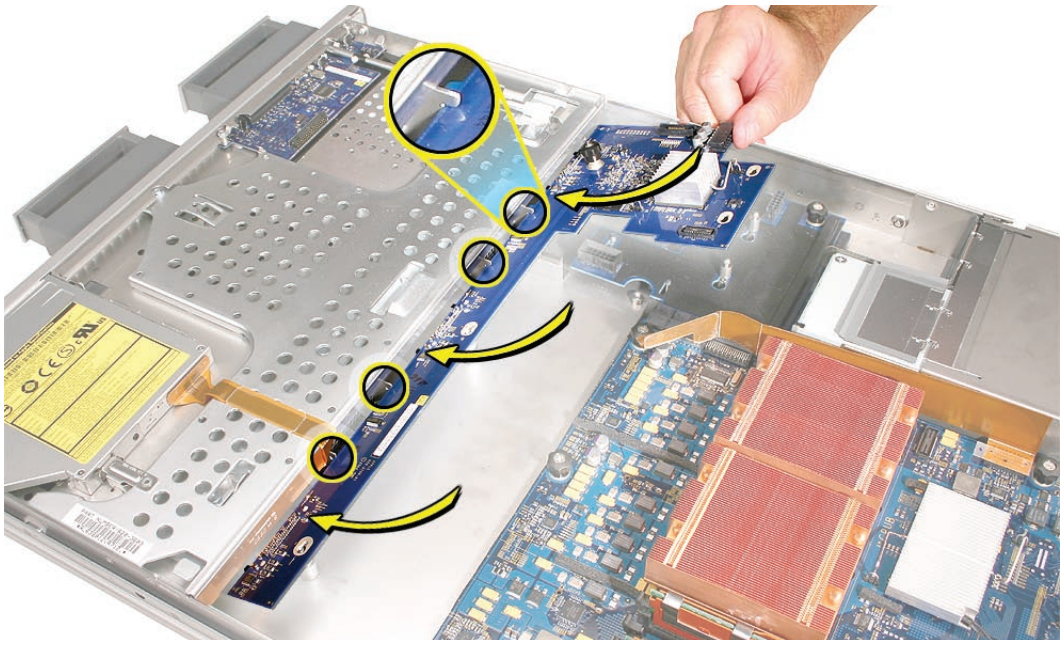


4. Shift the backplane to the left (towards the enclosure side), in the direction of the arrow shown, until it clears the four mushroom-shaped standoffs that hold the backplane in place.

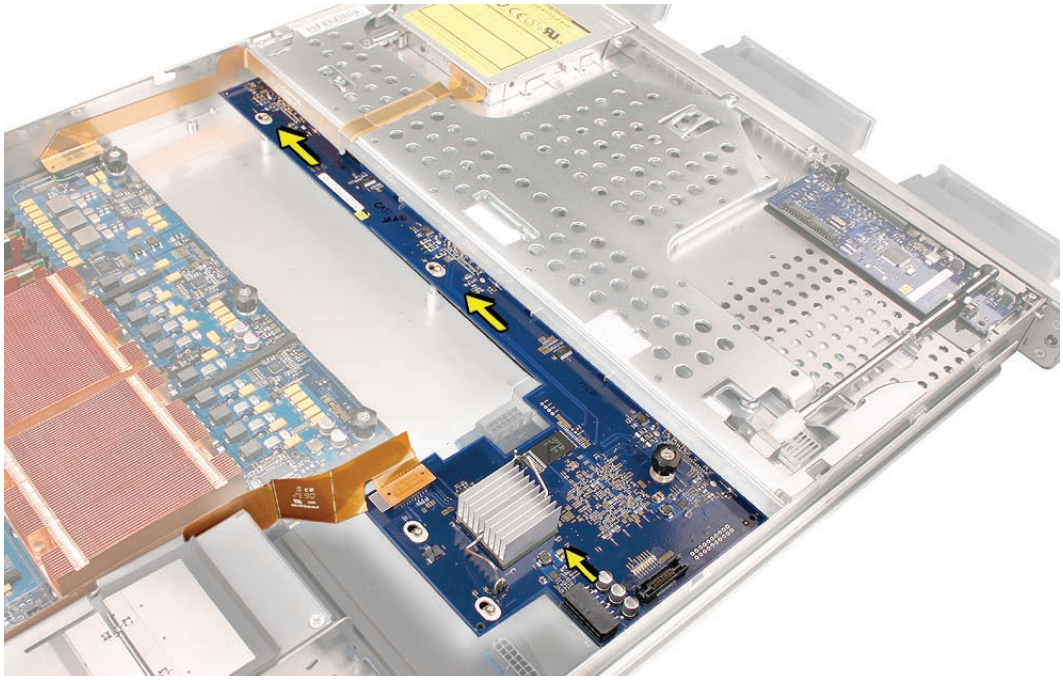
5. Rotate the backplane up slightly from the logic board side (as shown), and carefully pull the backplane up and toward the logic board to free it from the standoffs and four backplane alignment slots in the enclosure. Be careful not to let any backplane components come into contact with the standoffs or the enclosure as you remove the backplane.



Replacement Note: When installing the backplane, lower the backplane into the enclosure at a slight angle (as shown), and carefully align the front edge of the backplane with the four backplane alignment slots in the enclosure. Be careful not to let any backplane components come into contact with the standoffs or the enclosure as you install the backplane.



Then rotate the backplane downward and over the four mushroom-shaped standoffs. Finally, slide the backplane in the direction of the arrow shown to fully seat the backplane in the enclosure.



Xserve RAID Card

Tools

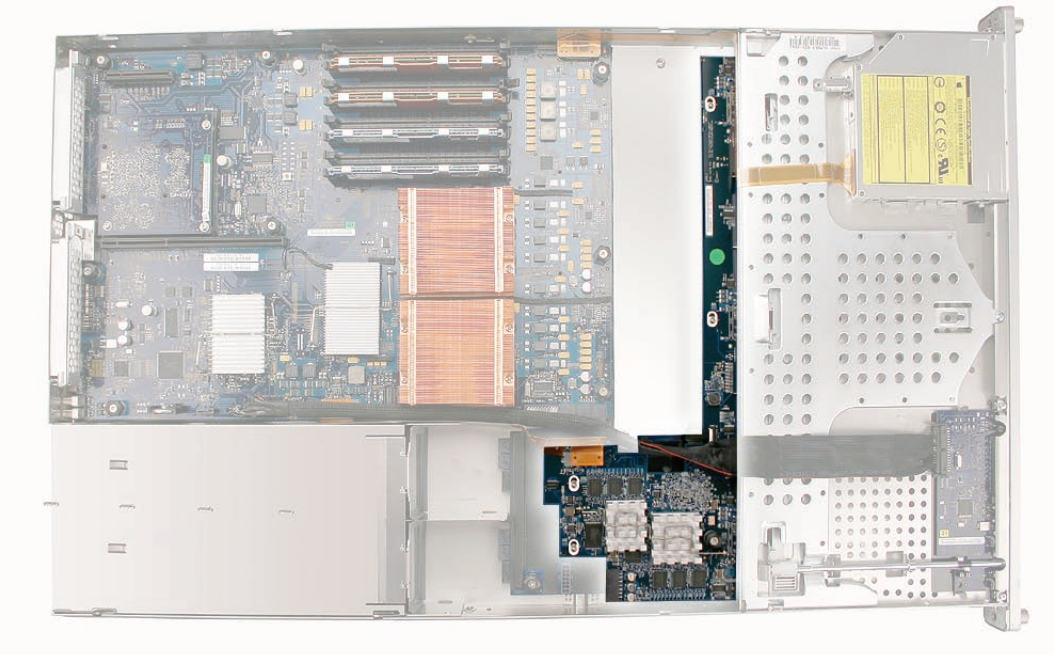
No tools are required for this procedure. You may, however, find a Phillips screwdriver useful in releasing the thumbscrew in step 4 below.

Preliminary Steps

Before you begin, do the following:

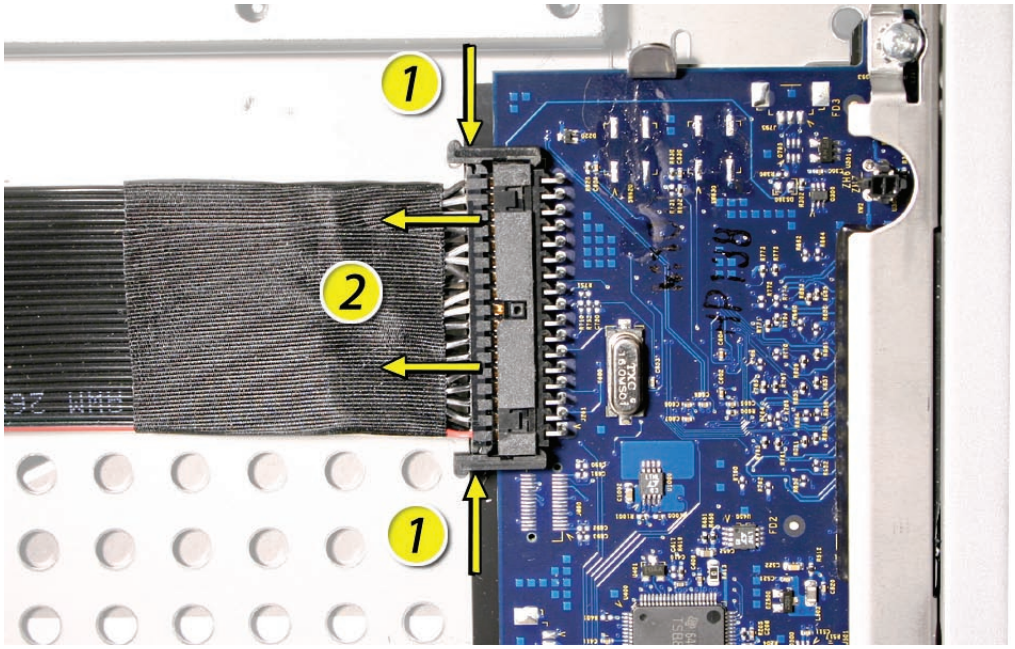
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove all Apple drive modules.
- Remove both power supplies.
- Remove the airflow duct.
- Remove the fan array.
- Remove the power distribution board cable.

Part Location

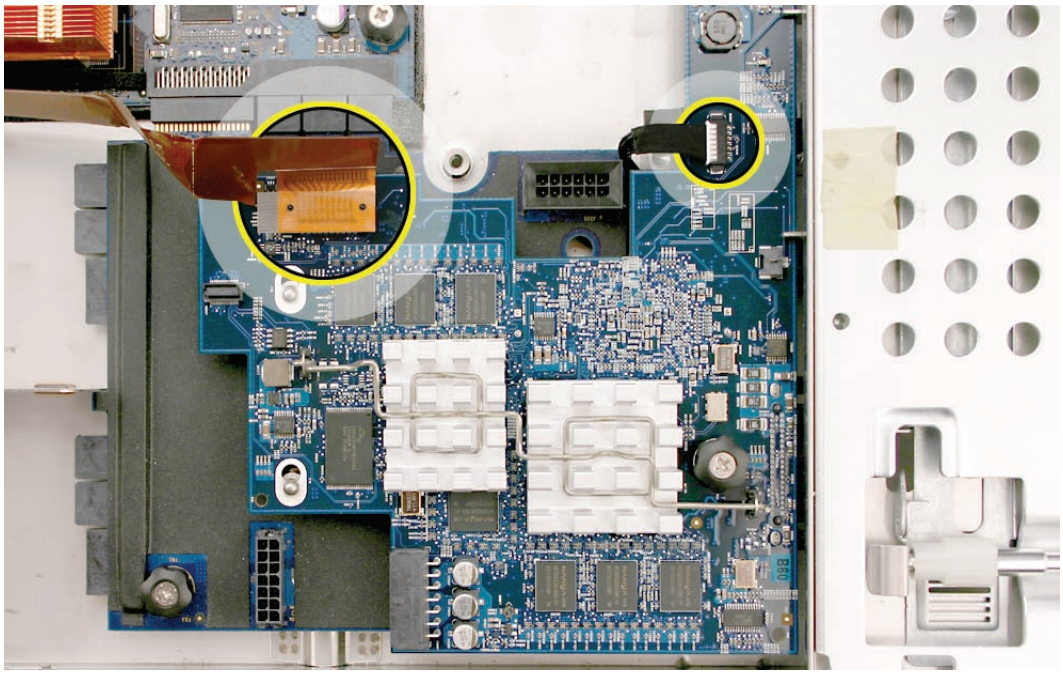


Procedure

1. Release the two locking levers on the front panel board cable connector and disconnect the cable from the front panel board. Move the front panel board cable out of the way.

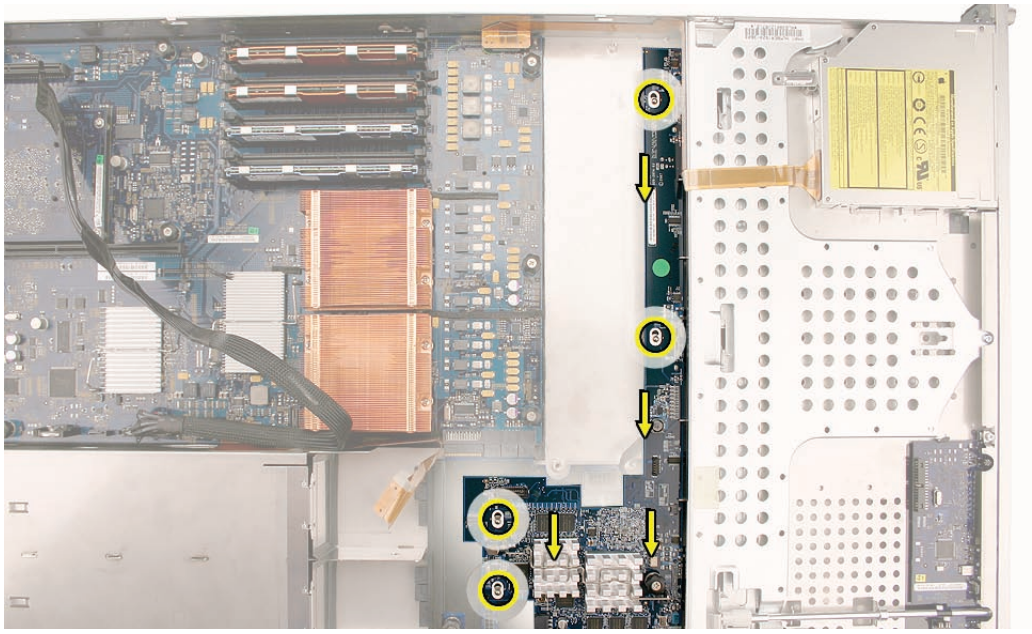


2. Disconnect the backplane-to-logic board I/O cable from the Xserve RAID Card.
3. Disconnect the Xserve RAID Card battery cable from the Xserve RAID Card.

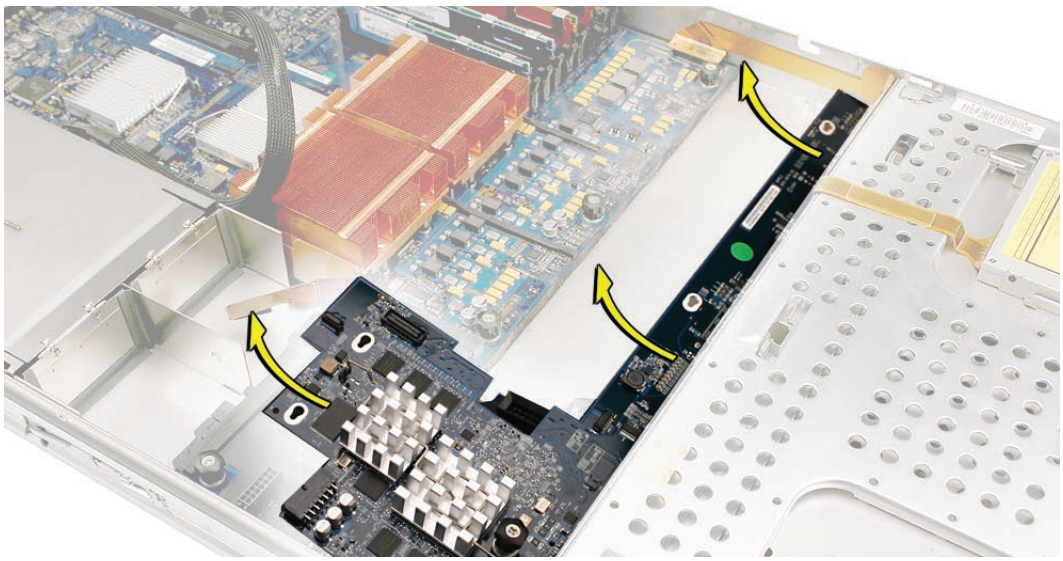


4. Release the thumbscrew that secures the Xserve RAID Card to the enclosure.
Note: The thumbscrew is captive; you cannot remove it.

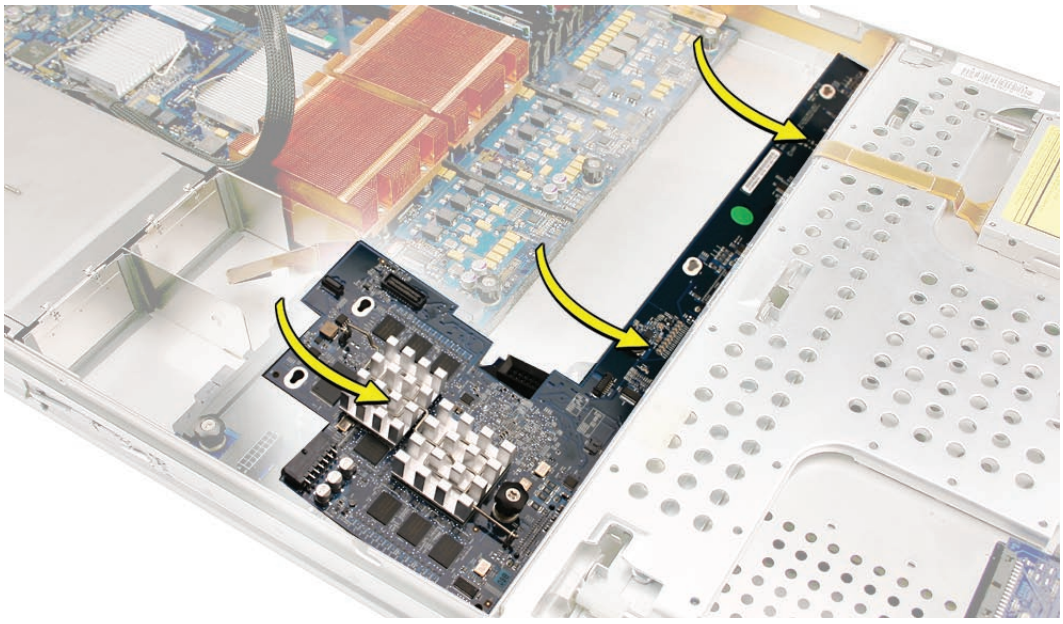
5. Shift the Xserve RAID Card toward the enclosure side, in the direction of the arrow shown, until it clears the four mushroom-shaped standoffs that hold the card in place.



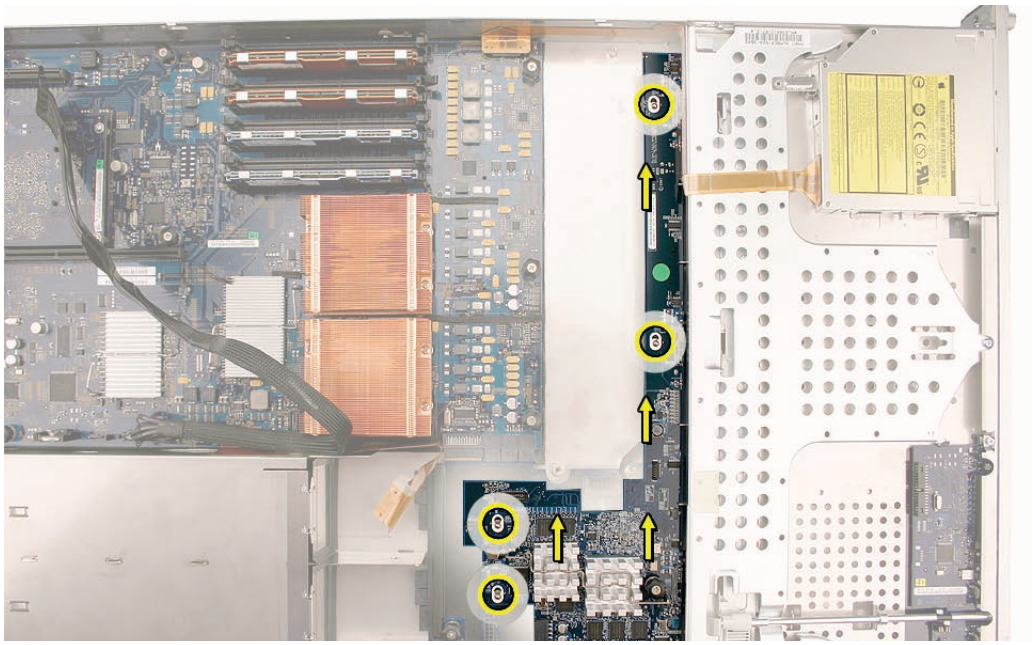
6. Rotate the Xserve RAID Card up slightly from the logic board side (as shown), and carefully pull the card up and toward the logic board to free it from the standoffs and four alignment slots in the enclosure. Be careful not to let any Xserve RAID Card components come into contact with the standoffs or the enclosure as you remove the card.



Replacement Note: When installing the Xserve RAID Card, lower the card into the enclosure at a slight angle (as shown), and carefully align the front edge of the card with the four alignment slots in the enclosure. Be careful not to let any Xserve RAID Card components come into contact with the standoffs or the enclosure as you install the card.



Then rotate the Xserve RAID Card downward and over the four mushroom-shaped standoffs. Finally, slide the card in the direction of the arrow shown to fully seat the card in the enclosure.



Note: System Profiler does not display the serial number for the Xserve RAID Card. You can find the serial number by checking the serial number sticker on the card.

Power Distribution Board Cable

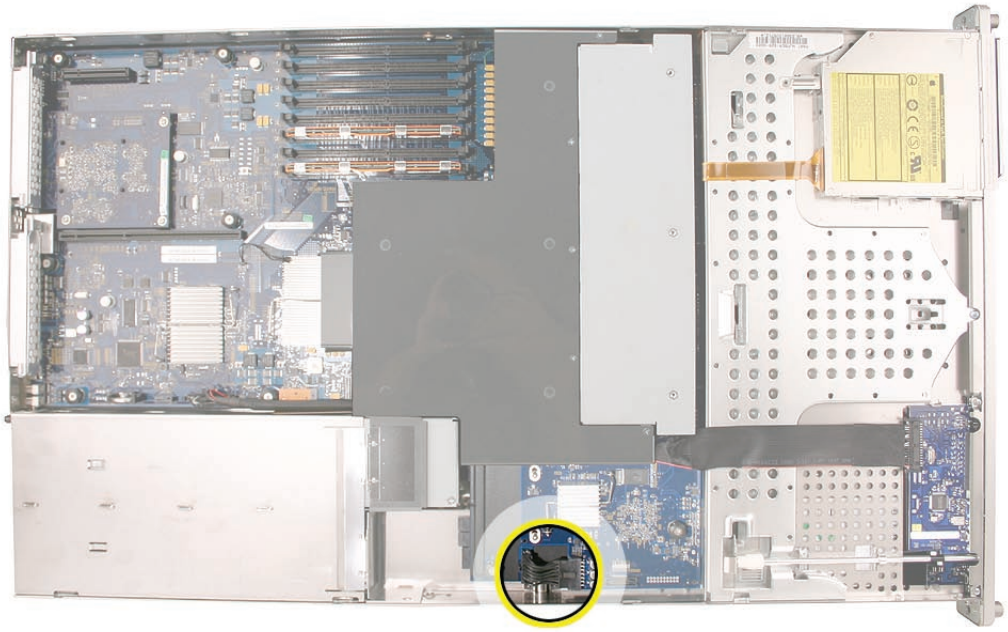
Tools

The only tool required for this procedure is a nylon probe tool or similar plastic pry tool.

Preliminary Steps

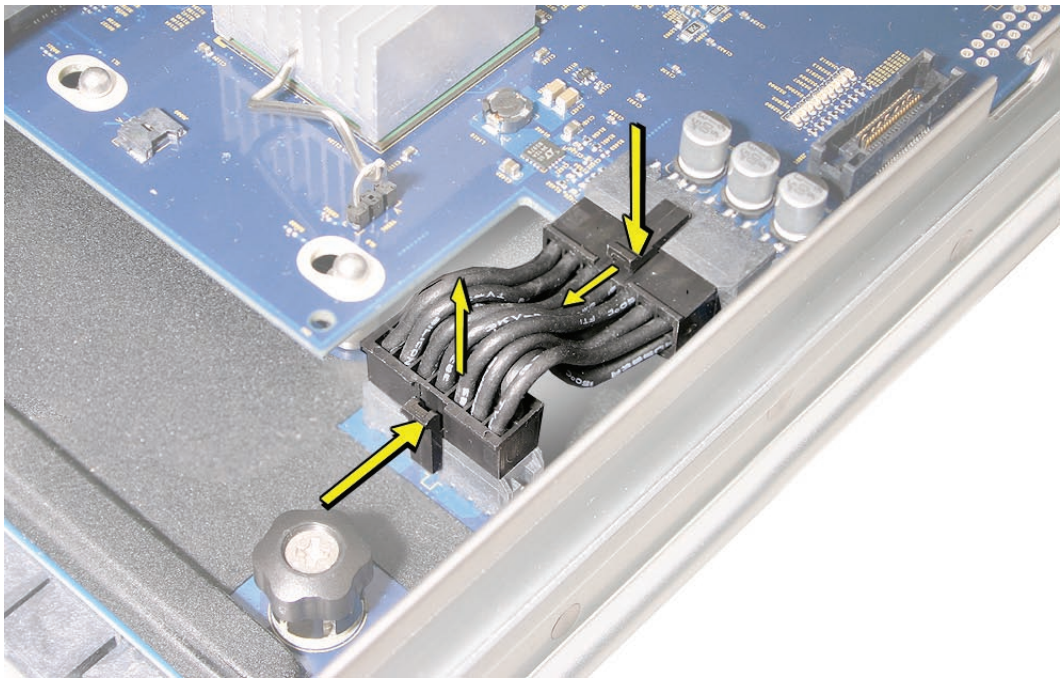
Before you begin, open the Xserve and place the bottom housing on a sturdy, flat surface.

Part Location



Procedure

1. Disconnect the power distribution board cable from its connector on the drive interconnect backplane.
2. Disconnect the power distribution board cable from the power distribution board and remove the cable from the Xserve.



Caution: The power distribution board cable connectors are very tight and can be difficult to disconnect. Use a nylon probe tool or similar plastic pry tool to gently yet firmly pry outwards on the cable connector while depressing the cable connector latch with your thumb and forefinger to separate the connectors.

Xserve RAID Card Battery

Tools

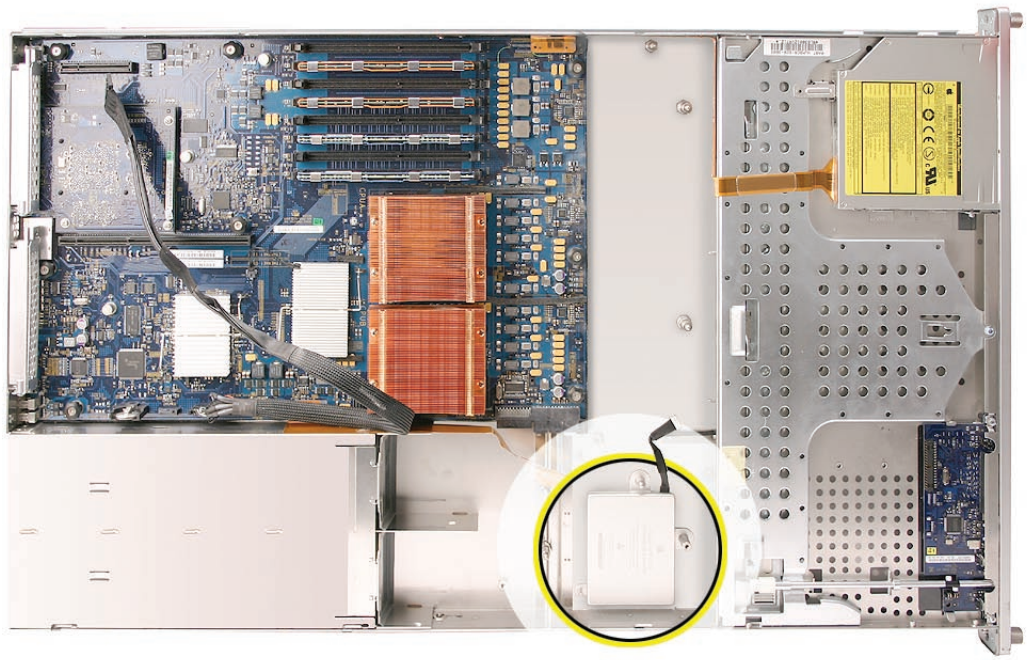
No tools are required for this procedure.

Preliminary Steps

Before you begin, do the following:

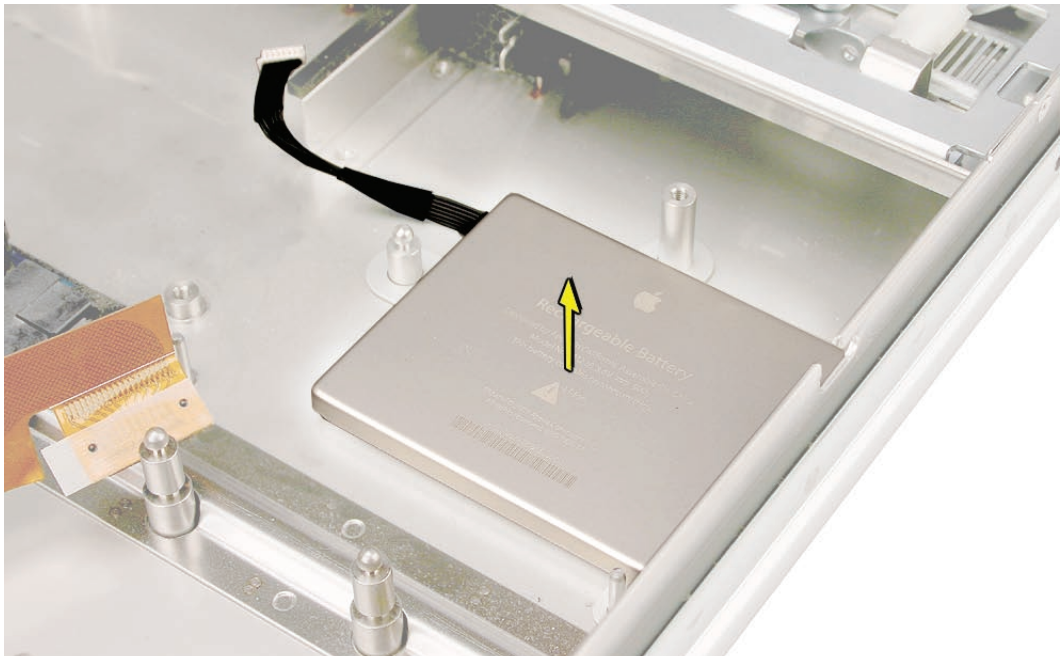
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove all Apple drive modules.
- Remove both power supplies.
- Remove the airflow duct.
- Remove the fan array.
- Remove the power distribution board cable.
- Remove the Xserve RAID Card.
- Remove the power distribution board.

Part Location

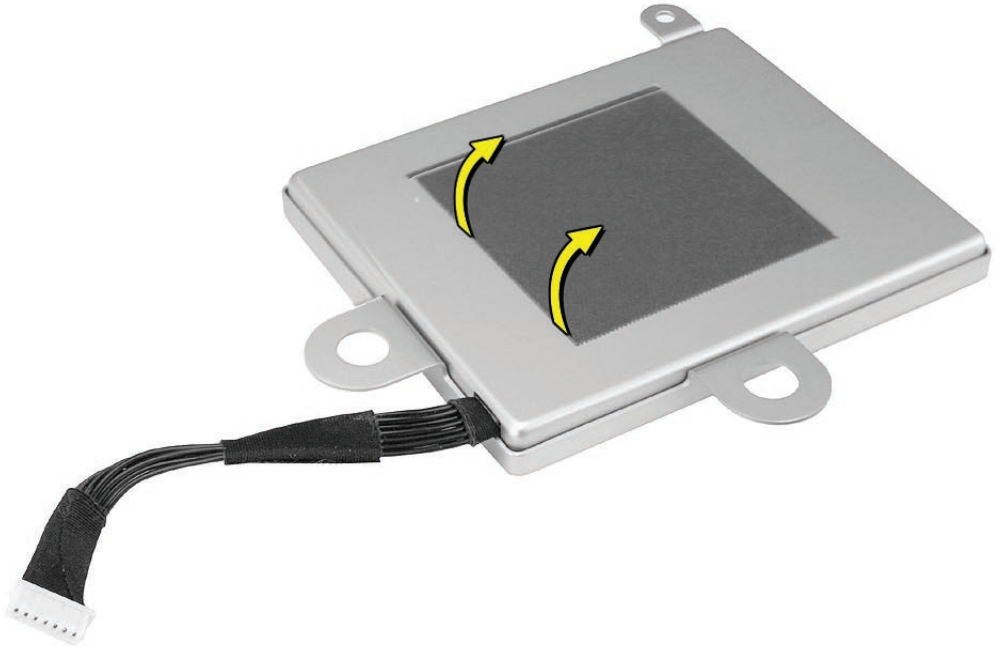


Procedure

1. Lift the Xserve RAID Card battery straight up off its three mounting posts.
   Note: Adhesive on the underside of the battery holds it in place on the enclosure floor.
2. Remove the battery from the enclosure.



Replacement Note: Before installing a new battery, remove the protective film covering the adhesive on the underside of the battery. Then lower the battery into place on its three mounting posts.



Important: Do not drop, disassemble, crush, incinerate, or expose the battery to temperatures above 212° F (100° C). Stop using the battery if it appears damaged in any way. Replace the battery only with an Apple-authorized battery for this product. Dispose of used batteries promptly according to your local environmental guidelines.

Power Distribution Board

Tools

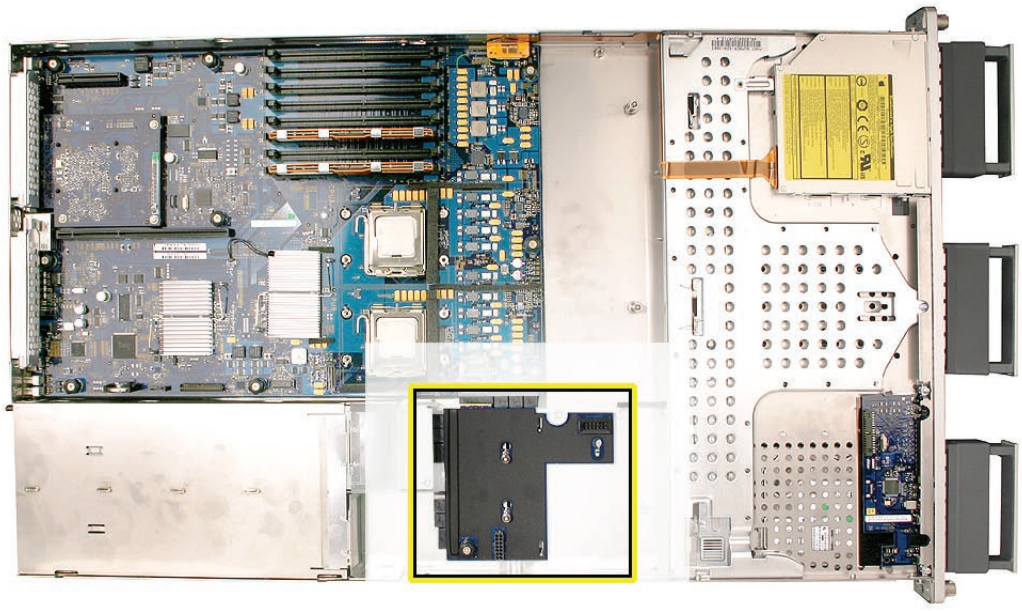
No tools are required for this procedure. You may, however, find a Phillips screwdriver useful in releasing the thumbscrew in step 1 below.

Preliminary Steps

Before you begin, do the following:

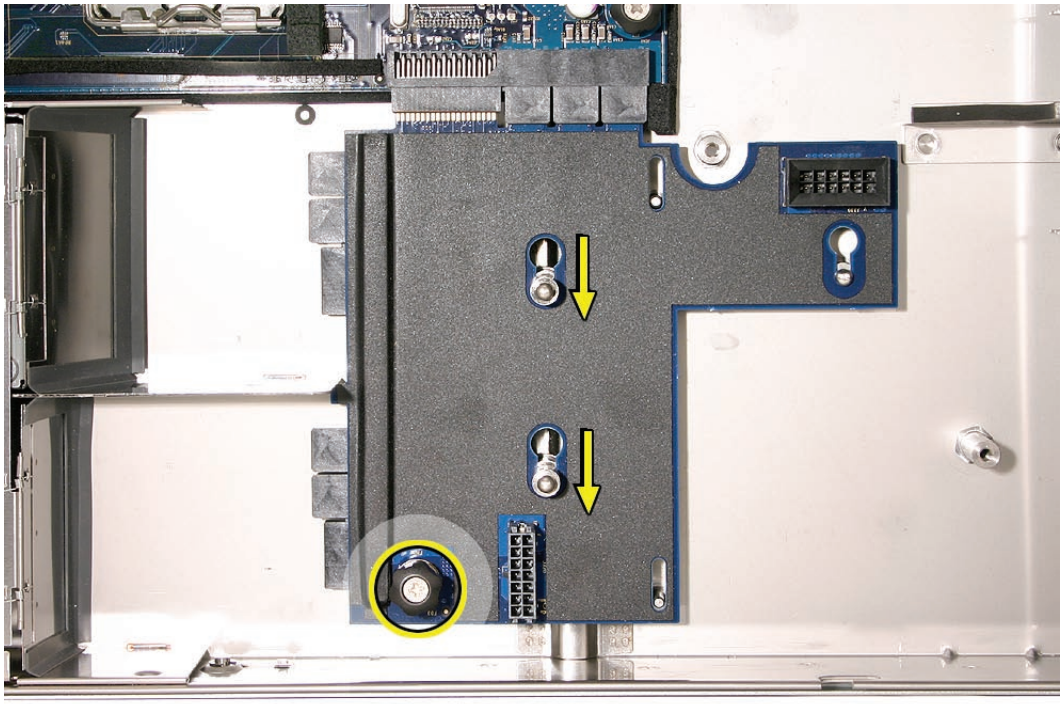
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove all Apple drive modules.
- Remove both power supplies.
- Remove the airflow duct.
- Remove the fan array.
- Remove the drive interconnect backplane.
- Remove the power distribution board cable.

Part Location



Procedure

1. Release the thumbscrew that secures the power distribution board to the enclosure.
   Note: The thumbscrew is captive; you cannot remove it.
2. Pull the board toward the side of the enclosure in the direction shown, to disconnect it from its connector on the logic board.



3. Lift up the board and remove it from the enclosure.

Processor Heat Sink

This procedure illustrates how to remove the heat sink for the right processor (CPU A). The instructions are the same for removing the heat sink for the left processor (CPU B).

Note: The thermal bond between the processor heat sink and the processor requires thermal grease for proper operation. Every time you remove the processor heat sink, you must replace the thermal grease. New grease and alcohol wipes for cleaning off the previous grease are included with replacement heat sinks, processors, logic boards, ID tabs, and enclosures. Grease and wipes are also available through a separate thermal grease kit on GSX; order part number 076-1237, which contains enough grease for both processors. Note that instructions for applying the grease are included with this procedure.

Tools

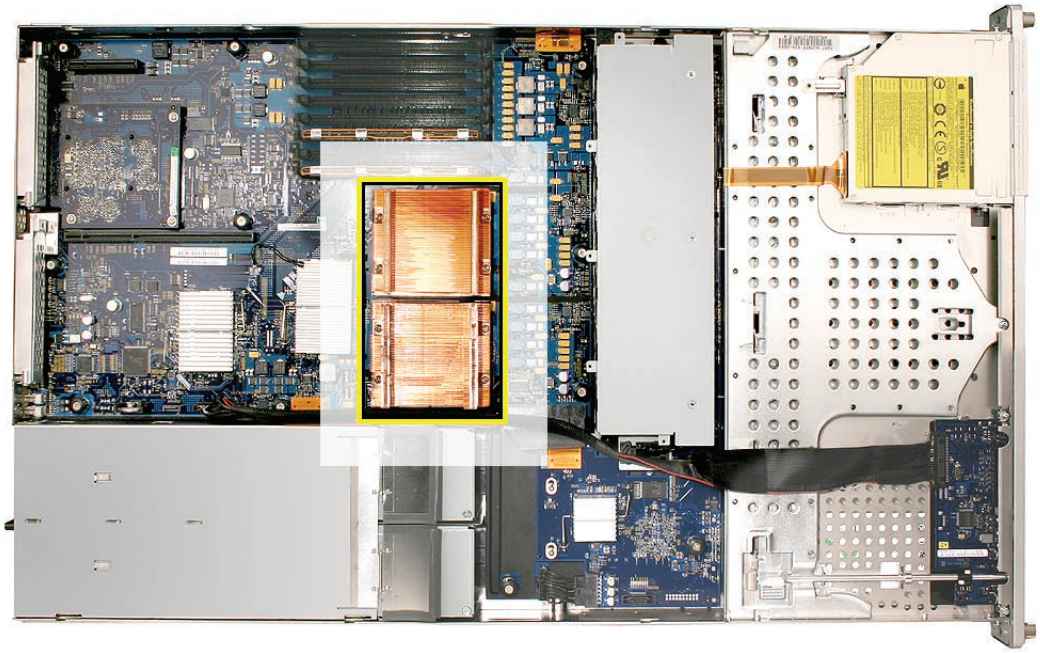
The only tool required for this procedure is a Phillips #1 screwdriver.

Preliminary Steps

Before you begin, do the following:

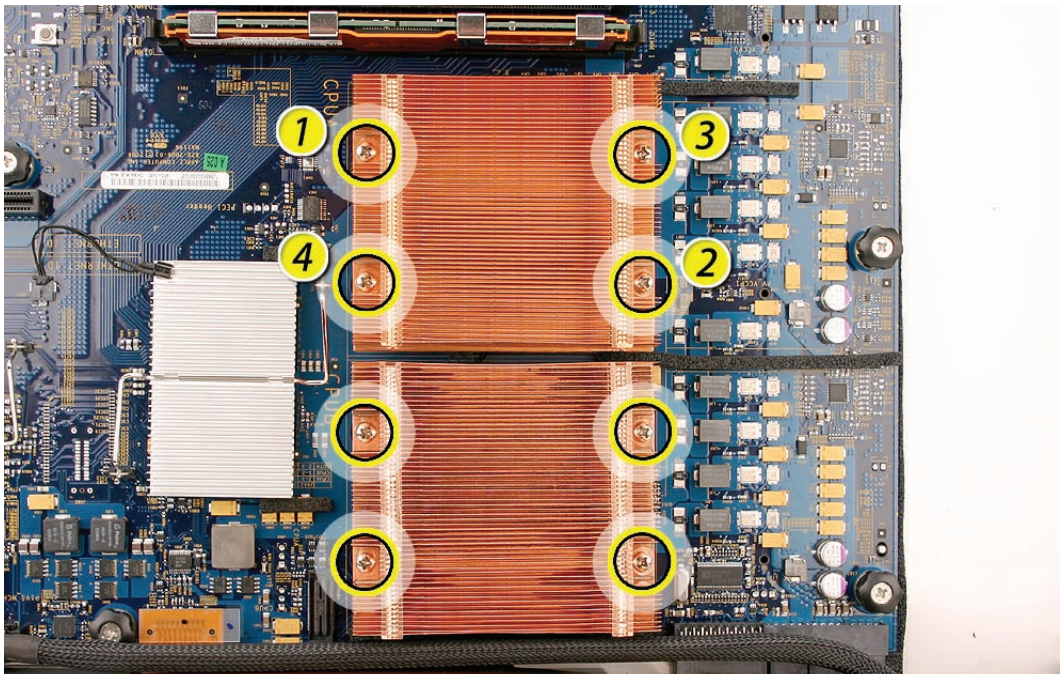
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove the airflow duct.

Part Location



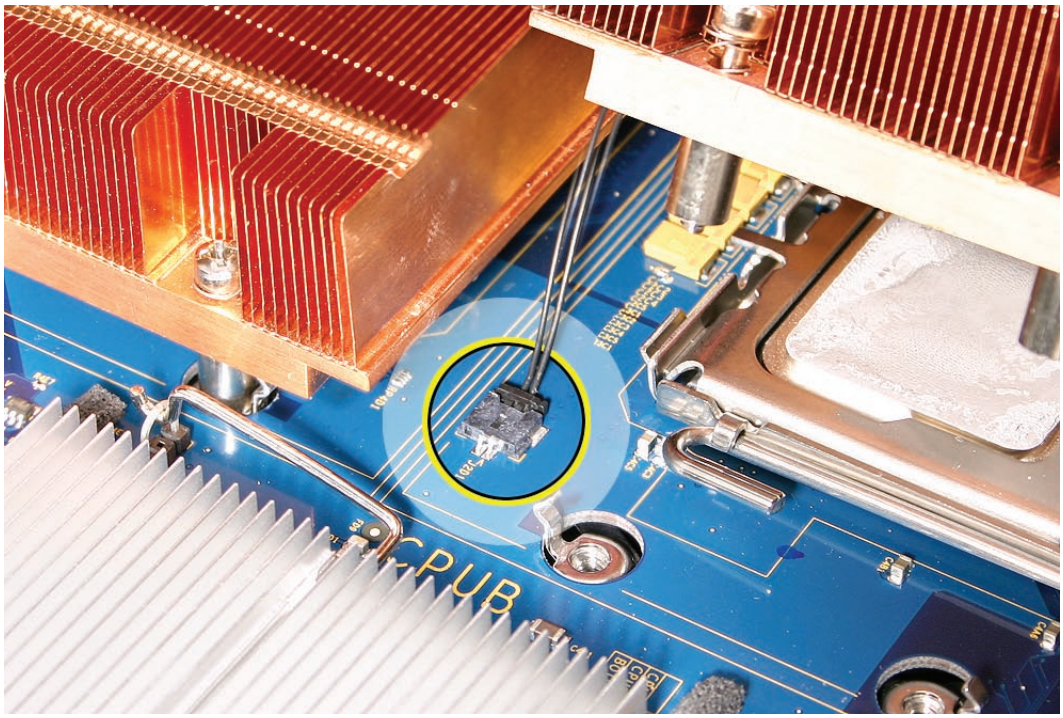
Procedure

1. Loosen the four screws securing the heat sink that is closest to the DIMM slots (CPU A) in the order indicated below.



Important: Each heat sink is connected to the main logic board by a small 2-pin thermal sensor cable. Be careful not to pull on the wire as you lift each heat sink enough to disconnect the cable from the main logic board. It's easier to reach the sensor connectors on the logic board if you start with the right heat sink near the DIMM slots (CPU A).

2. Slowly lift the heat sink off the processor just far enough that you can reach the sensor cable connector. You might feel some resistance from the thermal grease that binds the heat sink to the processor.
3. Pull on the connector, not the wires, to disconnect the sensor cable from the main logic board.

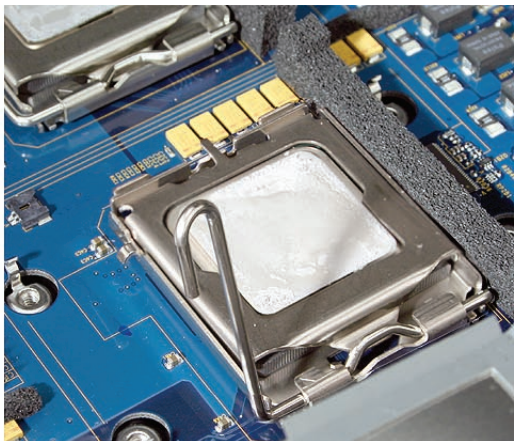


4. Lift the heat sink straight up and out of the enclosure.
5. Repeat steps 1 through 4 for the left processor (CPU B) heat sink.

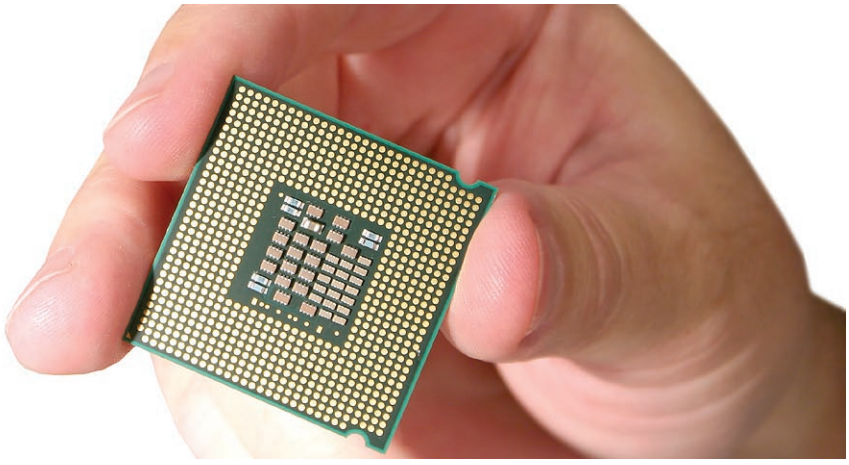
Replacement Procedure

Note: If you are re-using the existing processor heat sink, you will need to clean off the old thermal grease from both the heat sink and the top of the processor; if you are installing a new heat sink, you will need to clean off just the processor. You must then apply new thermal grease to the top of the processor before installing the heat sink onto the processor.

1. Clean off any existing thermal grease on the left (CPU B) processor heat sink using the alcohol wipes provided with the thermal grease. Keep the package that the wipes came in for use later.
2. Release the latch on the metal processor holder for the left processor (CPU B).
3. Rotate the top of the holder to the open position.

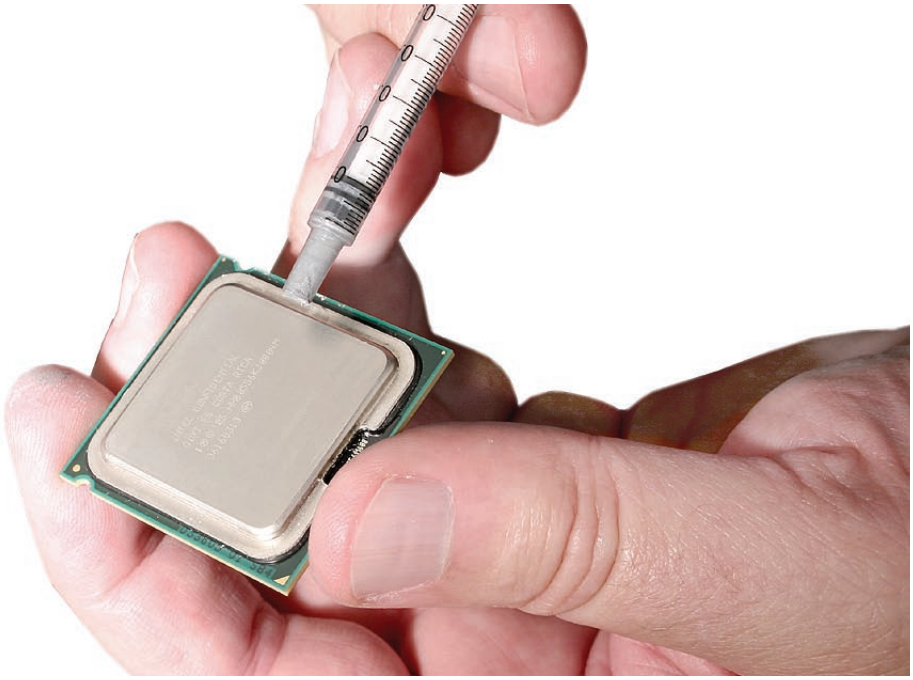


4. Carefully lift the processor out of the holder.
   Important: When removing or installing a processor, always hold the processor by the edges. Be extremely careful not to touch the gold pins on the bottom of the processor, as this type of connector is very sensitive to contamination. Also be careful not to touch the gold pins in the processor socket on the logic board.

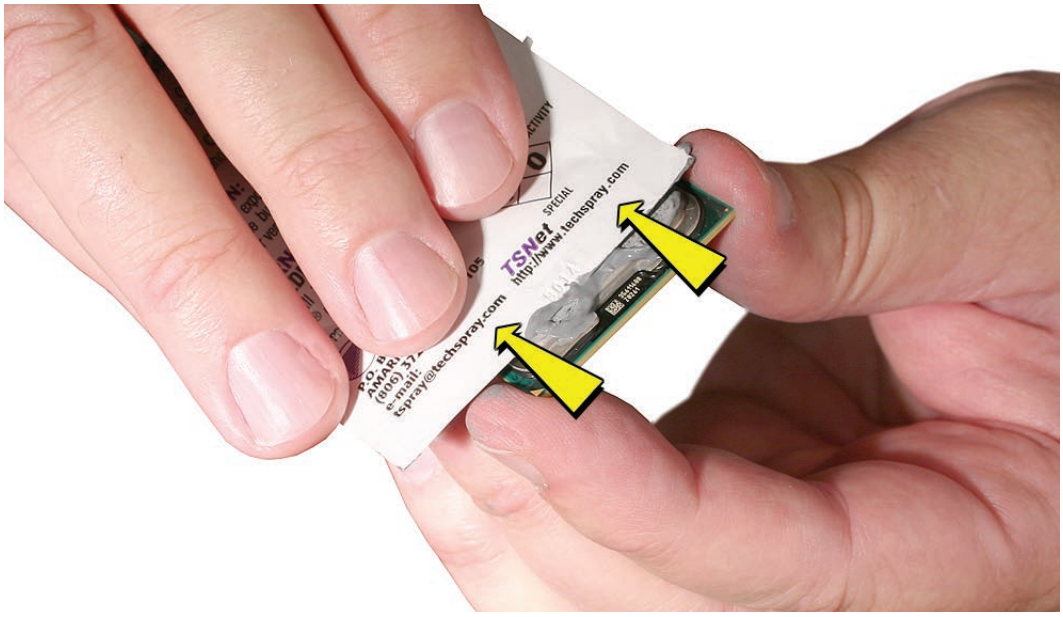


5. Clean off any existing thermal grease on the top face of the processor using the alcohol wipes provided with the thermal grease, being careful not to get any thermal grease on the processor contacts.

6. Apply the contents on a single syringe of thermal grease (approximately 4.5 cc) to the top surface of the processor.
Important: Be sure not to get any grease anywhere on the processor other than the very top, flat surface that directly contacts the heat sink.

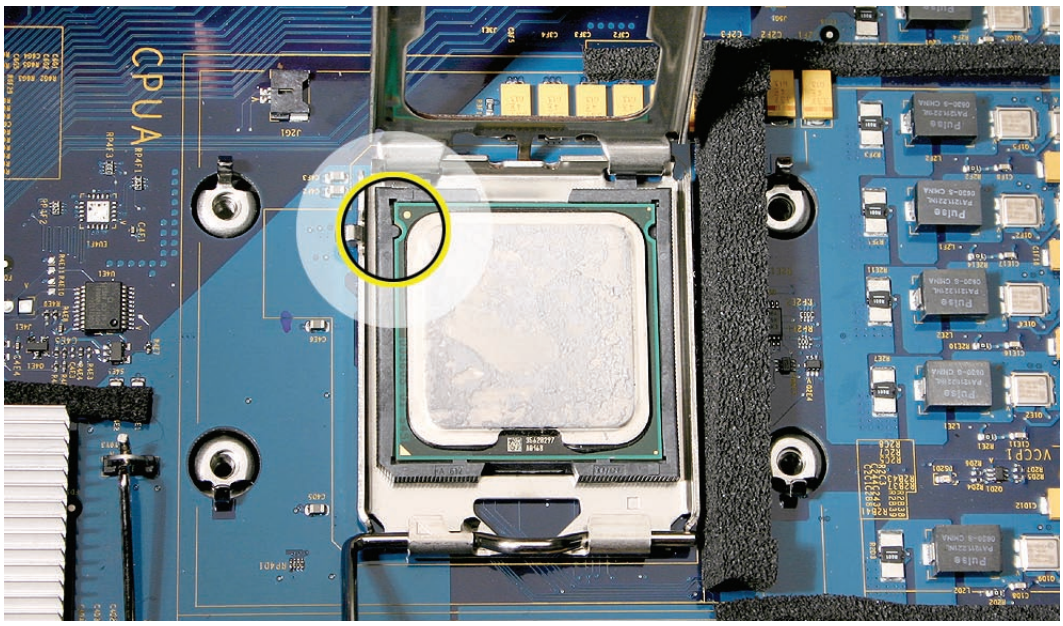


7. Use the edge of the package that the alcohol wipes came in as a spatula to smoothly spread the thermal grease evenly over the entire top surface of the processor. Scrape off any excess grease with the package edge, then discard it.

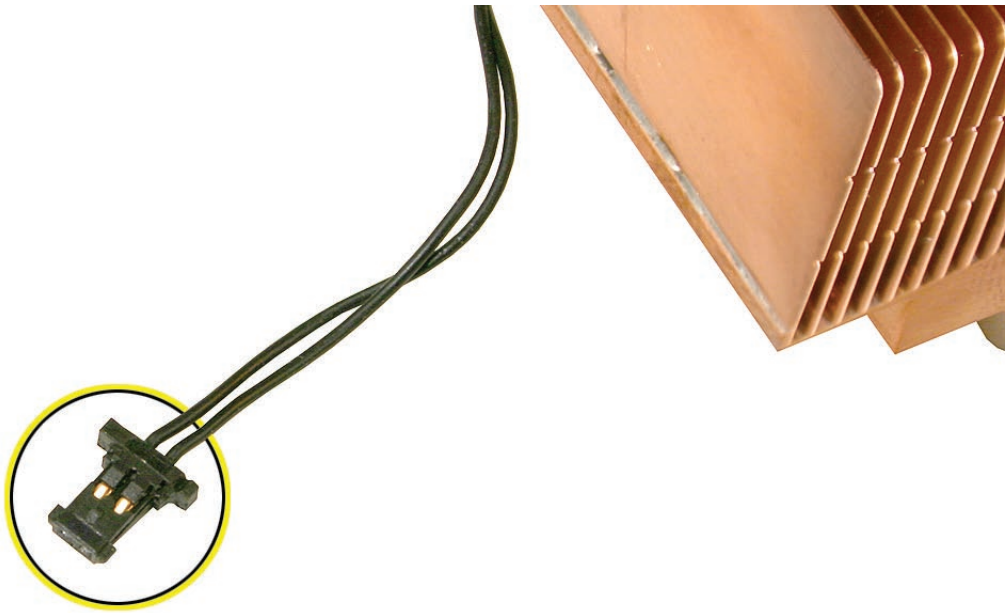


8. Holding the processor by its edges only, replace the processor into its holder on the logic board, being careful not to get any thermal grease on the contacts of either the processor or its socket holder.

   Note: When installing the processor on the logic board, align the processor notch with the tab on the processor holder, as illustrated. Then lower the processor straight down onto the socket.

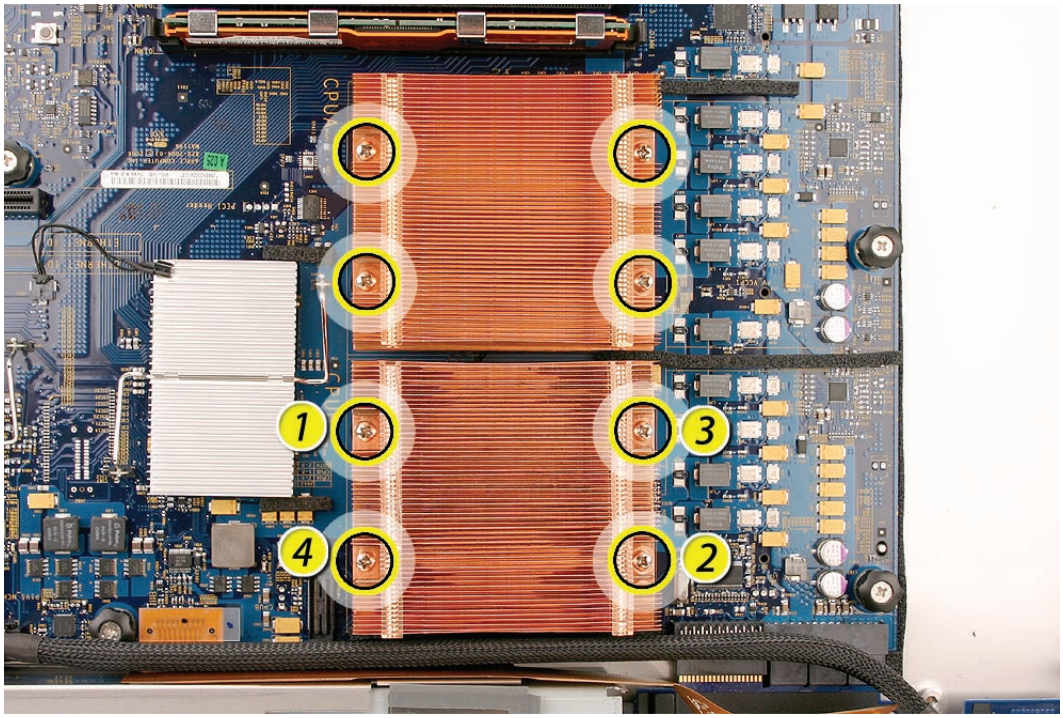


9. Rotate the top of the holder to the closed position.
10. Engage the latch on the metal processor holder.
11. Holding the heat sink in one hand, reconnect the 2-pin thermal sensor cable for the left processor (CPU B) heat sink to the logic board.
    Note: Make sure the connector on the sensor cable is oriented as illustrated, with the gold fingers facing up.



12. Carefully seat the heat sink over the processor, aligning the four screws with the holes in the logic board.

13. Tighten the four captive Phillips mounting screws for the left processor heat sink in the order indicated below.



14. Repeat steps 1 through 13 for the right (CPU A) processor heat sink.

Processor

This procedure illustrates how to remove the right processor (CPU A). The instructions are the same for removing the left processor (CPU B).

Note: The thermal bond between the processor heat sink and the processor requires thermal grease for proper operation. Every time you remove the processor heat sink, you must replace the thermal grease. New grease and alcohol wipes for cleaning off the previous grease are included with replacement processors and logic boards. Instructions for applying the grease are included with the heat sink removal procedure. Note that replacement processor heat sinks come with the grease already applied.

Tools

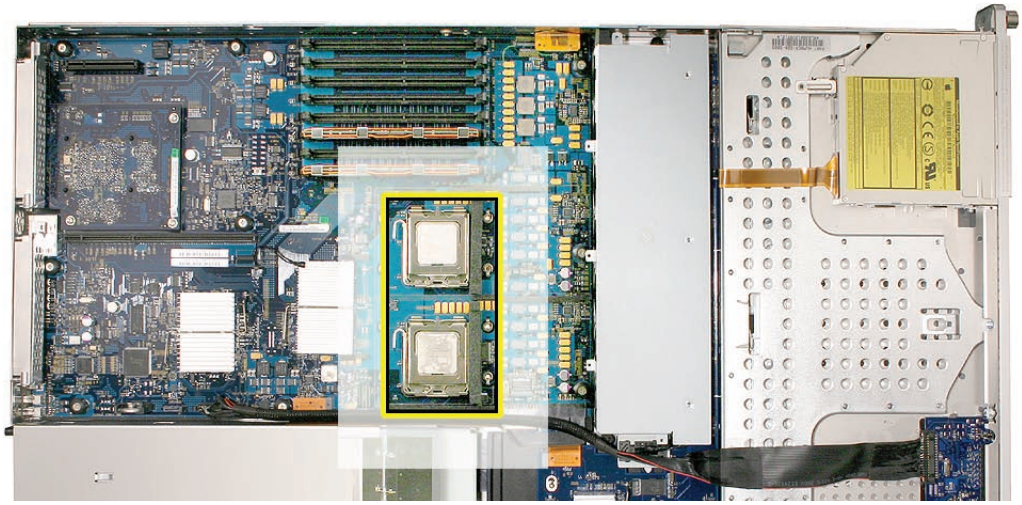
No tools are required for this procedure. However, you may find a flat-blade screwdriver helpful in releasing the processor holder latch.

Preliminary Steps

Before you begin, do the following:

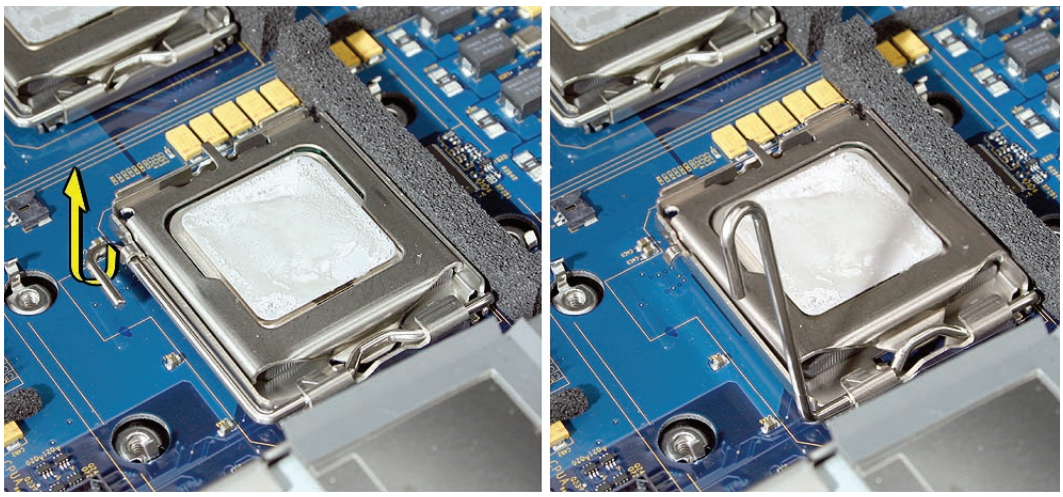
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove the airflow duct.
- Remove the processor heat sink.

Part Location



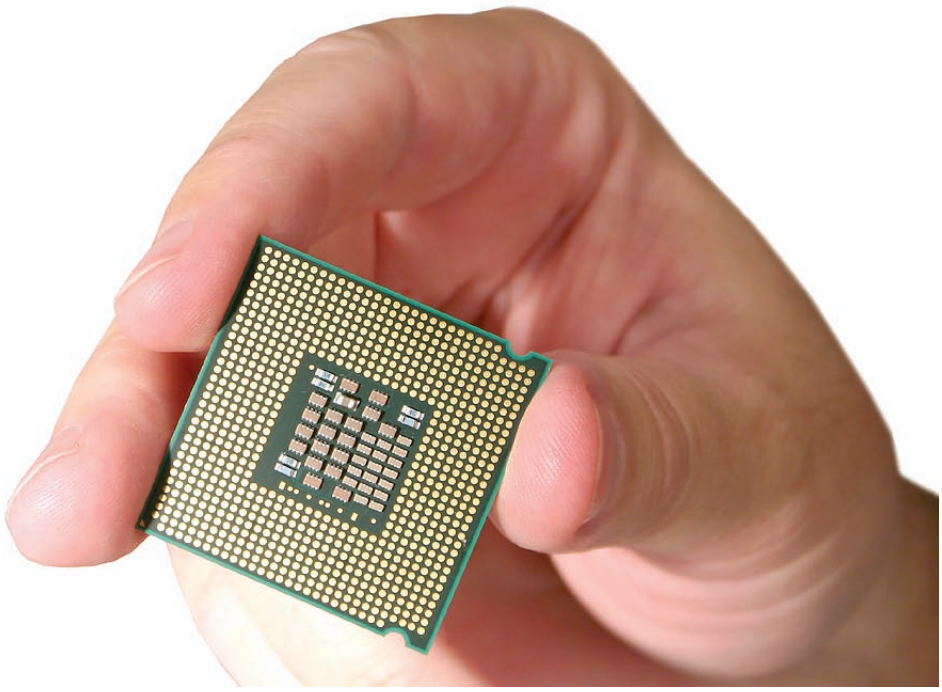
Procedure

1. Release the latch on the metal processor holder.
2. Rotate the top of the holder to the open position.



3. Lift the processor out of the holder.

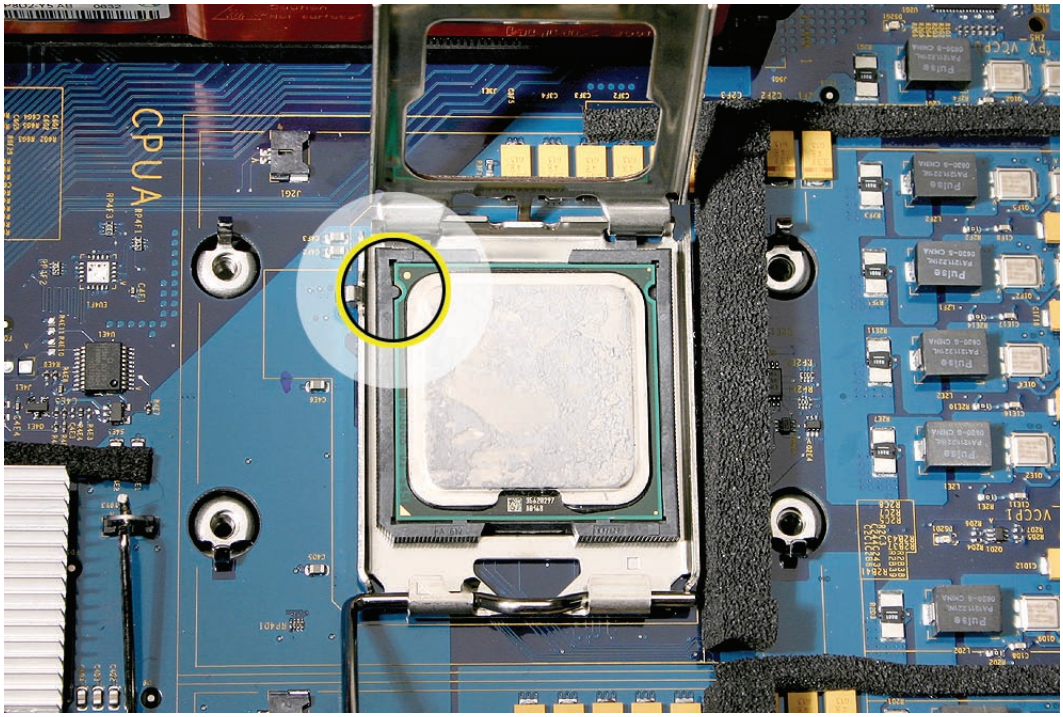
Important: When removing or installing a processor, always hold the processor by the edges. Be extremely careful not to touch the gold pins on the bottom of the processor, as this type of connector is very sensitive to contamination. Also be careful not to touch the gold pins in the processor socket on the logic board.



Note: You can identify the processor by the speed etched on the processor can. You must clean off the thermal grease from installed processors to see the speed.

Replacement Note: Before installing a replacement processor, remove the protective cap covering the new processor's connector.

Replacement Note: When installing the processor on the logic board, align the processor notch with the tab on the processor holder, as illustrated. Then lower the processor straight down onto the socket.



Note: Unlike in earlier Xserve G5 computers, replacing a processor in Xserve (Late 2006) does not require running Apple Service Diagnostic for thermal calibration.

Video Mezzanine Card

Tools

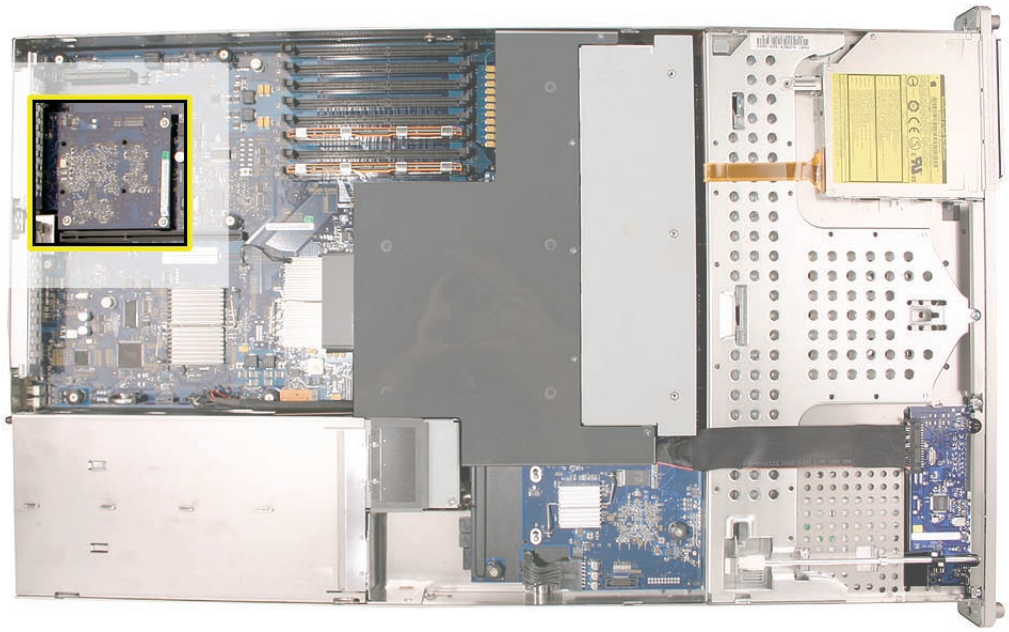
The only tool required for this procedure is a Phillips #1 screwdriver.

Preliminary Steps

Before you begin, do the following:

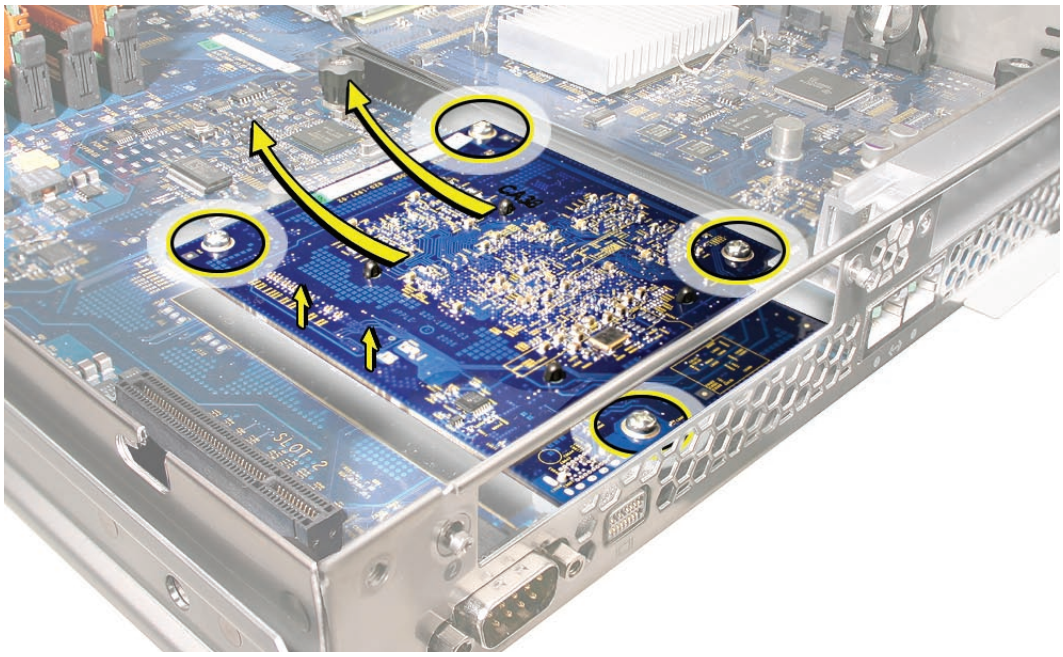
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove the right PCI-E riser card and any installed expansion card in slot 2.

Part Location



Procedure

1. Remove the four Phillips screws that fasten the mezzanine card to the logic board.
2. Pull up evenly on all sides of the card to disconnect it from its logic board connector under the card, and remove the card from the Xserve.



Replacement Note: When installing the mezzanine card, be sure to press down gently and evenly on it to seat the connector on the underside of the card to the logic board. Then replace the four screws.

Logic Board

Tools

No tools are required for this procedure. You may, however, find a Phillips screwdriver useful in releasing the thumbscrews in steps 3 and 4 below.

Preliminary Steps

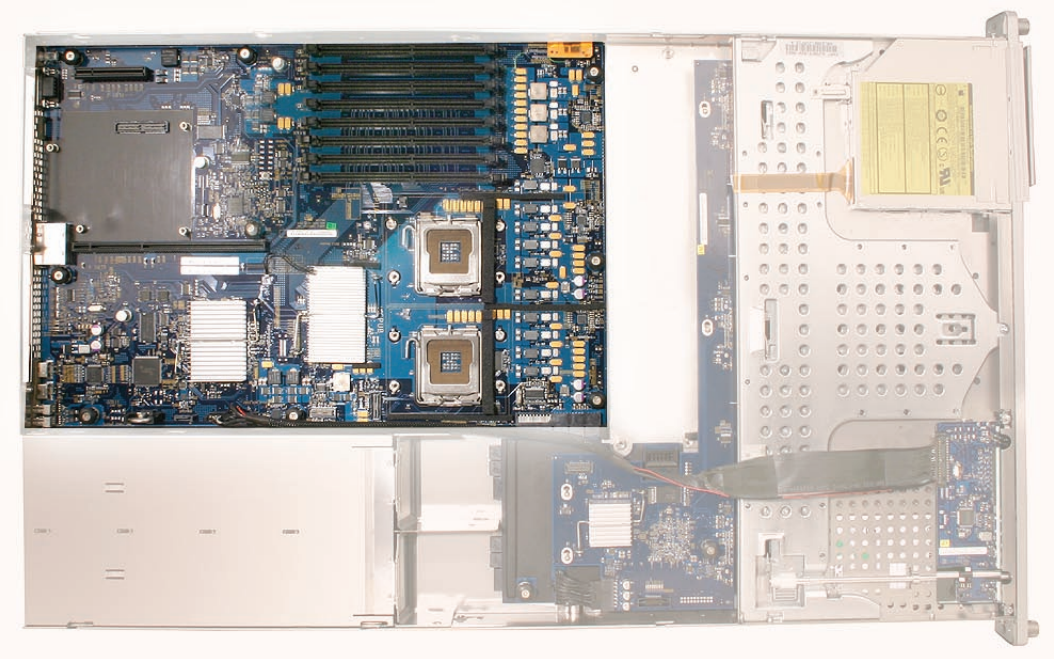
Before you begin, open the Xserve; place the bottom housing on a sturdy, flat surface; and remove the following:

- Both power supplies
- PCI riser cards and any expansion cards in both slots
- FB-DIMM memory (remove only if you are installing a replacement logic board)
- Airflow duct
- Fan array
- Backplane-to-logic board I/O cable
- Both processor heat sinks
- Both processors (remove only if you are installing a replacement logic board)
- Video mezzanine card (remove only if you are installing a replacement logic board)

Note: The replacement logic board does not include the processors, video mezzanine board, memory DIMMs, PCI riser cards, or expansion cards. You must transfer these modules from the original board to the new one.

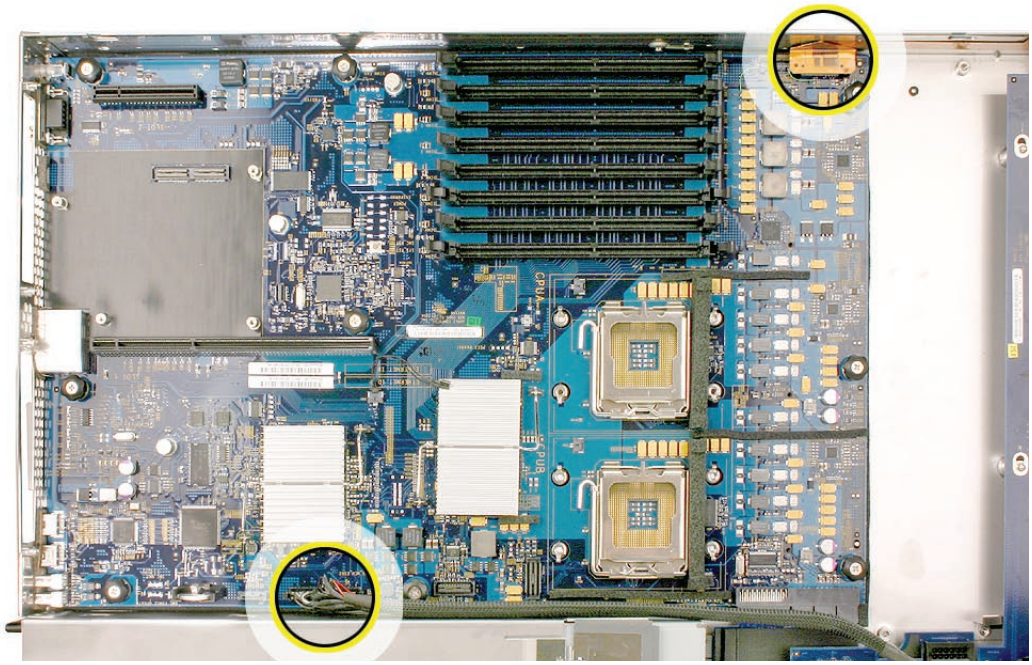
Caution: Be careful not to flex the logic board or handle it by its components or heat sinks, which could damage the board or its components. To minimize flexing, always grasp the logic board only by its thumbscrews or edges when removing or installing it.

Part Location

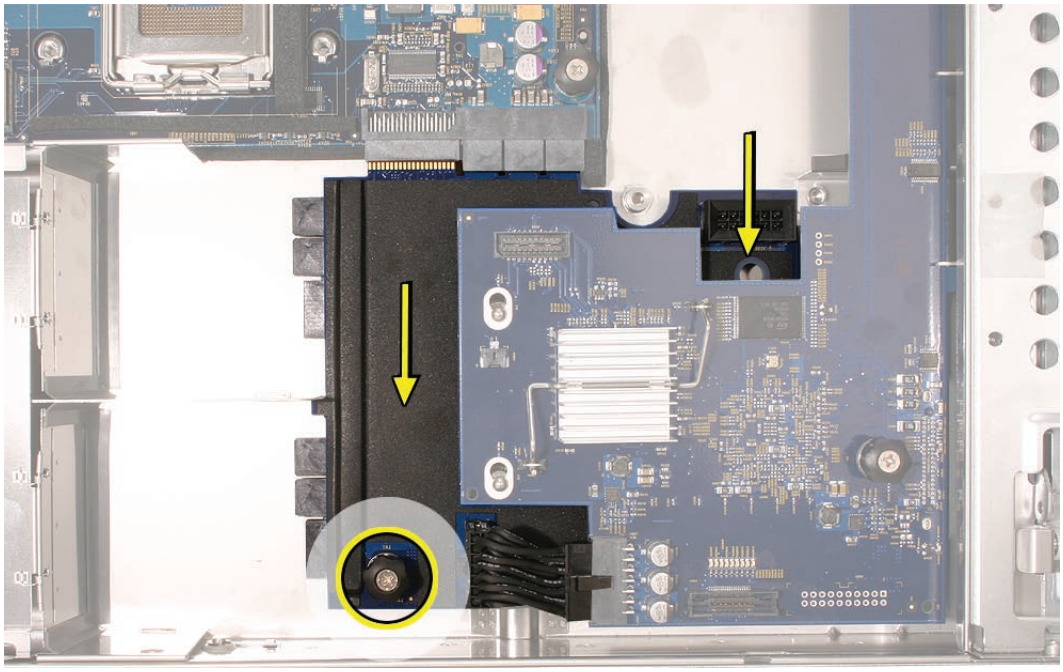


Procedure

1. Disconnect the optical drive cable from the logic board.
2. Release the two locking levers on the front panel board cable connector and disconnect the cable from the logic board. Move the cable aside so you have access to the logic board.

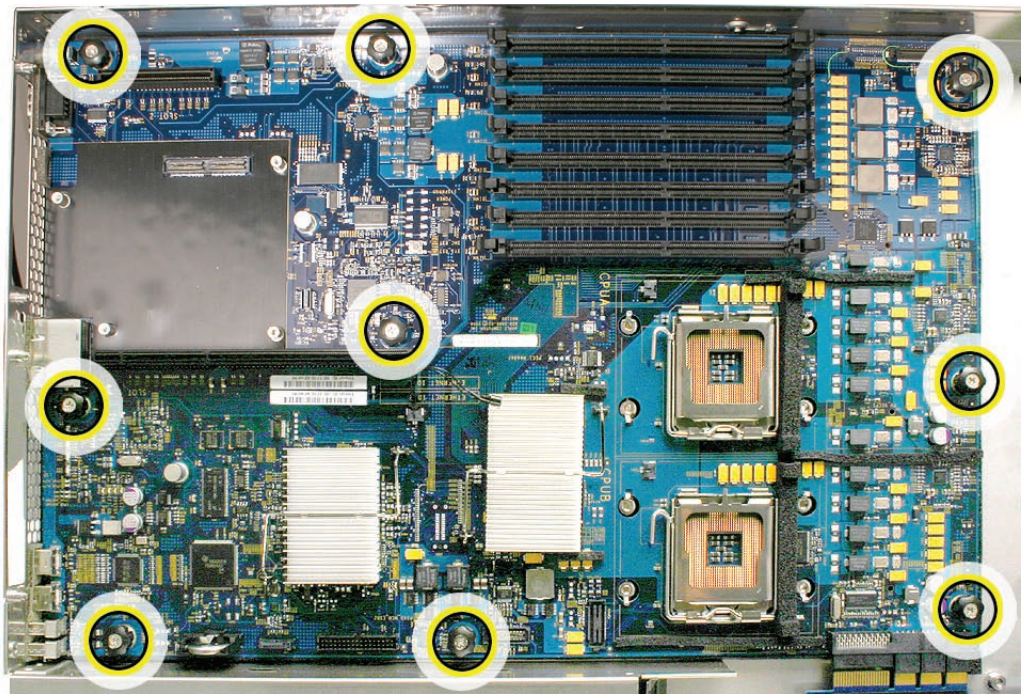


3. Loosen the single thumbscrew on the power distribution board and slide the board away from and out of the connector on the main logic board.



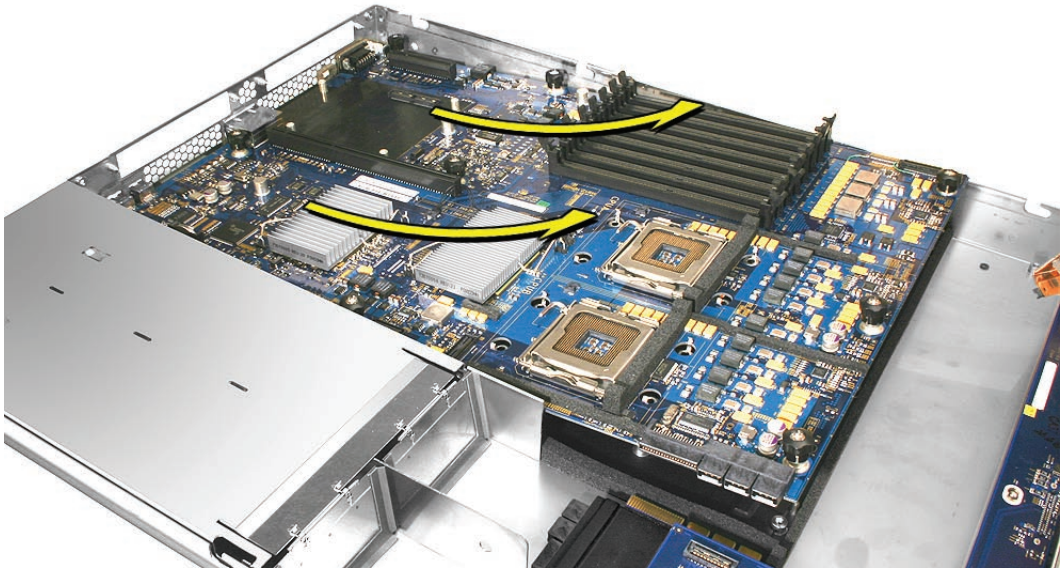
Note: Don't remove the power distribution board but make sure its edge connector is all the way out of the connector on the main logic board.

4. Release the nine thumbscrews that secure the logic board to the chassis (highlighted in the illustration below).
Note: The thumbscrews are captive; you cannot remove them.

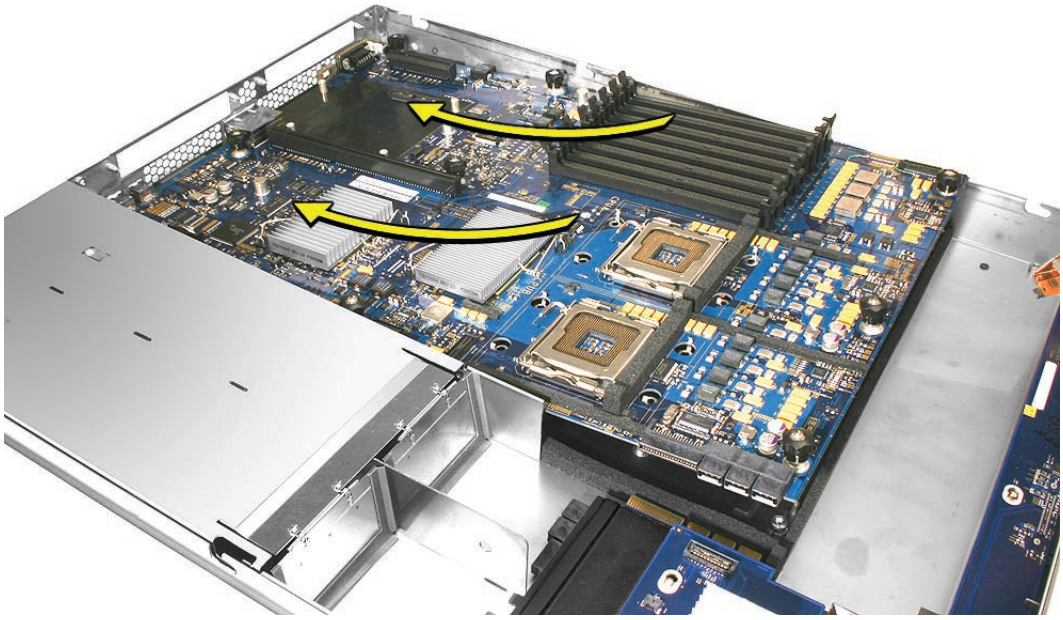


5. Grasping the logic board by its thumbscrews only, move it forward and up slightly to release it from the rear port openings in the enclosure.

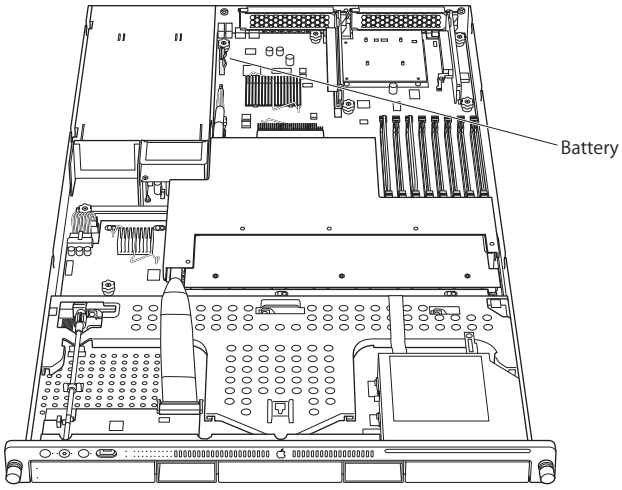
6. Continue to grasp the logic board by its thumbscrews and edges to lift and remove it from the Xserve.



Replacement Note: When replacing the logic board, make sure the board's rear port connectors fit through the appropriate openings in the Xserve's back panel. With the front edge of the board raised 1–2 inches (3–5 cm), guide the connectors on the back edge of the board into the openings in the back panel of the chassis, then lower the front edge of the board into place. Take special care to fit the clear plastic system identifier button through its opening.



Note: Remove the battery insulator tab from the battery holder on the replacement logic board.



Note: After installing a replacement logic board, be sure to transfer the processors, heat sinks, video mezzanine board, any expansion cards, PCI riser cards, and FB-DIMMs to the new board. You must also remove the battery insulator tab from the battery holder on the new board.

Note: Replacing the logic board in the Xserve changes its Ethernet ID numbers (MAC addresses) for both Ethernet ports. The new numbers are printed on an Ethernet label packaged with the replacement logic board. After installing the new logic board, place the new Ethernet label over the original Ethernet number on the Xserve's ID tab. Be careful to apply the new sticker completely onto the ID tab, smoothing out the label so that it is completely flush with the tab. Do not leave any part of the label (such as the corners) sticking up or these might catch and tear in the opening in the rear panel where the ID tab slides through when the ID tab is reinserted into the enclosure.

Rear ID Button

Tools

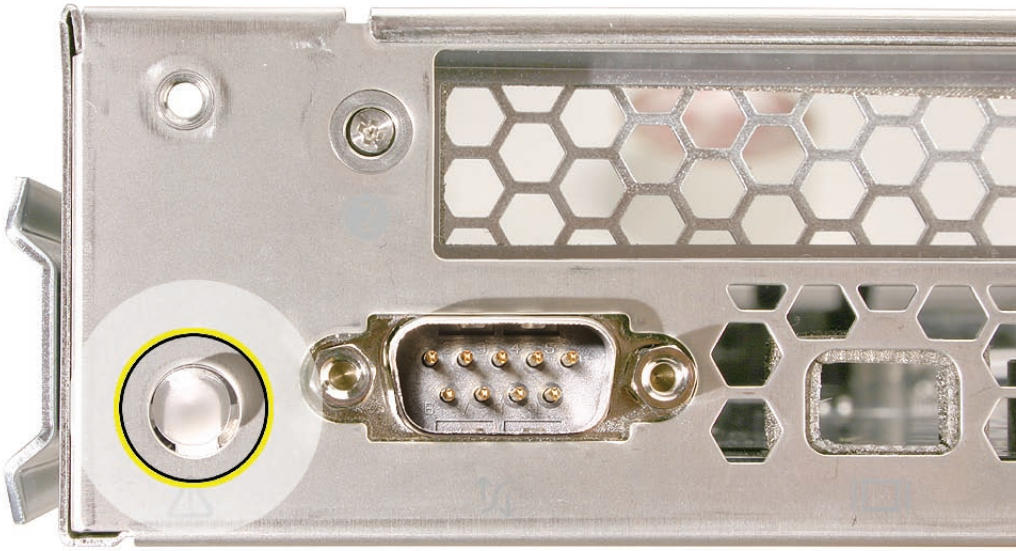
The only tool required for this procedure is needlenose pliers.

Preliminary Steps

Before you begin, do the following:

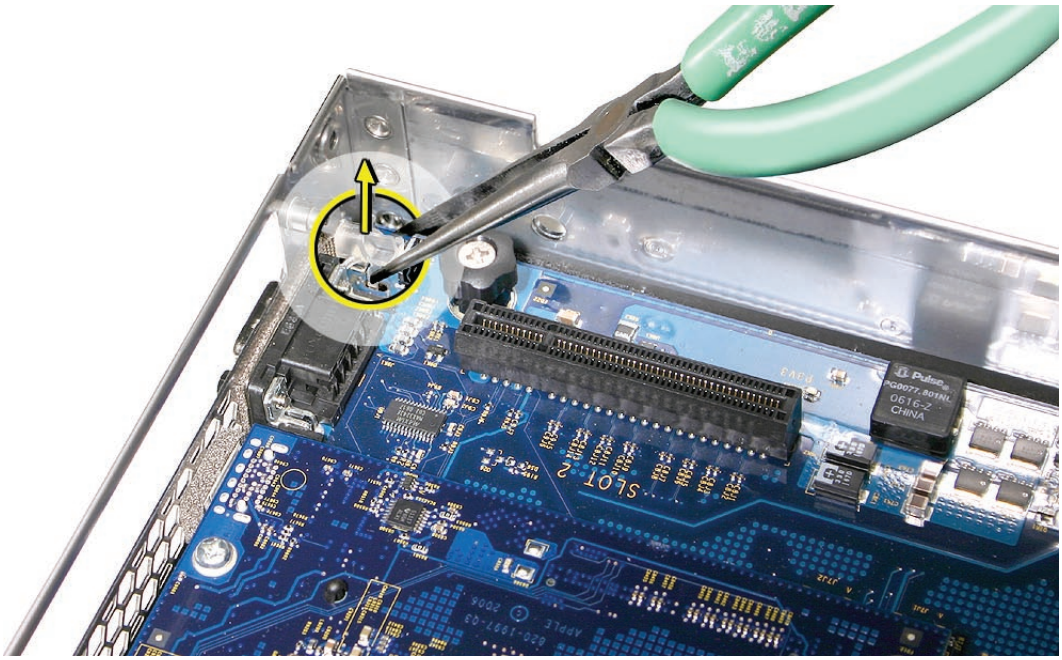
- Open the Xserve and place the bottom housing on a sturdy, flat surface.
- Remove the right PCI-E riser card and any installed expansion card in slot 2.

Part Location



Procedure

1. Using needlenose pliers, gently squeeze together the two clear plastic prongs that are part of the ID button to release them from the their holes in the logic board.
2. Gently grasp the body of the button with the needlenose pliers, and pull up and toward the front of the Xserve to carefully disengage the button's additional two prongs from the logic board.
3. Continue to pull up and toward the front of the Xserve to disengage the button from the opening in the rear panel.
4. Remove the button from the enclosure.



Replacement Note: When installing the rear ID button, take care not to bend or break the four small plastic prongs as you work the button back through the opening in the rear enclosure. Make sure all four prongs are properly seated in their respective holes in the logic board.

ID Tab

Note: Because you must remove both processor heat sinks during the preliminary steps of this procedure, you must replace the thermal grease on both processors when reassembling the Xserve. New grease and alcohol wipes for cleaning off the previous grease are supplied with the replacement ID tab. The grease and wipes are also available through a separate thermal grease kit on GSX; order part number 076-1237, which contains enough grease for both processors.

Tools

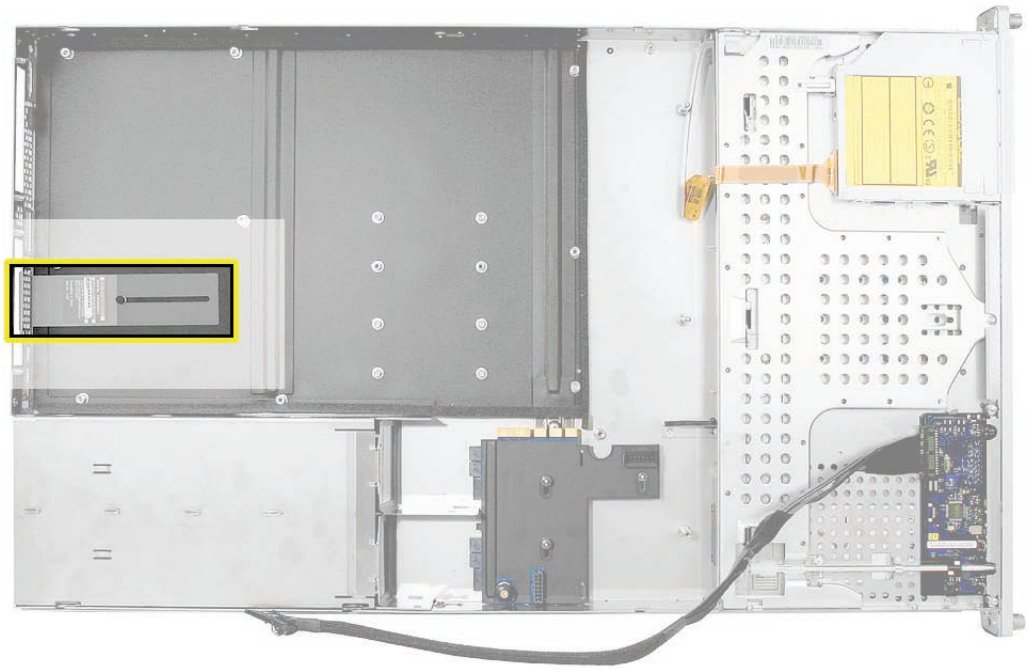
No tools are required for this procedure.

Preliminary Steps

Before you begin, open the Xserve; place the bottom housing on a sturdy, flat surface; and remove the following:

- Both power supplies
- PCI riser cards and any expansion cards in both slots
- Airflow duct
- Fan array
- Backplane-to-logic board I/O cable
- Both processor heat sinks
- Logic board

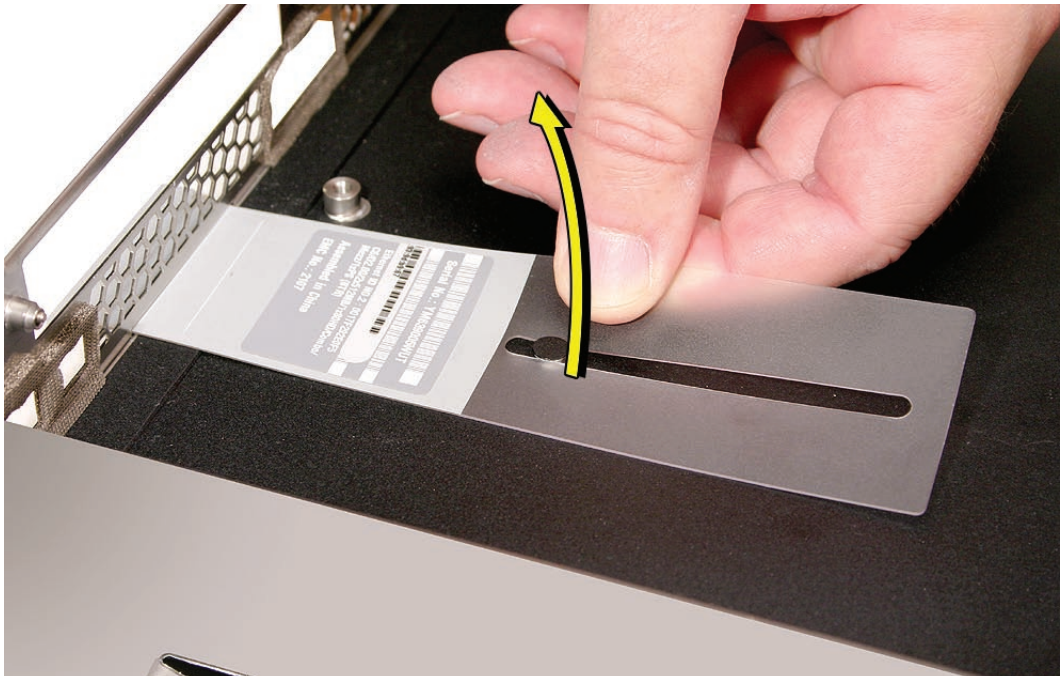
Part Location



Procedure

1. Once the logic board has been removed from the enclosure, the ID tab will be visible on the inside bottom of the enclosure; the tab protrudes from the rear panel through a slot.

2. Gently grasp the ID tab and pull up on it to disengage it from the channel that it slides along in the enclosure.



3. Pull the ID tab through the slot in the rear panel to remove it.

Enclosure

Note: Because you must remove both processor heat sinks during the preliminary steps of this procedure, you must replace the thermal grease on both processors when reassembling the Xserve. New grease and alcohol wipes for cleaning off the previous grease are supplied with the replacement enclosure. The grease and wipes are also available through a separate thermal grease kit on GSX; order part number 076-1237, which contains enough grease for both processors.

Tools

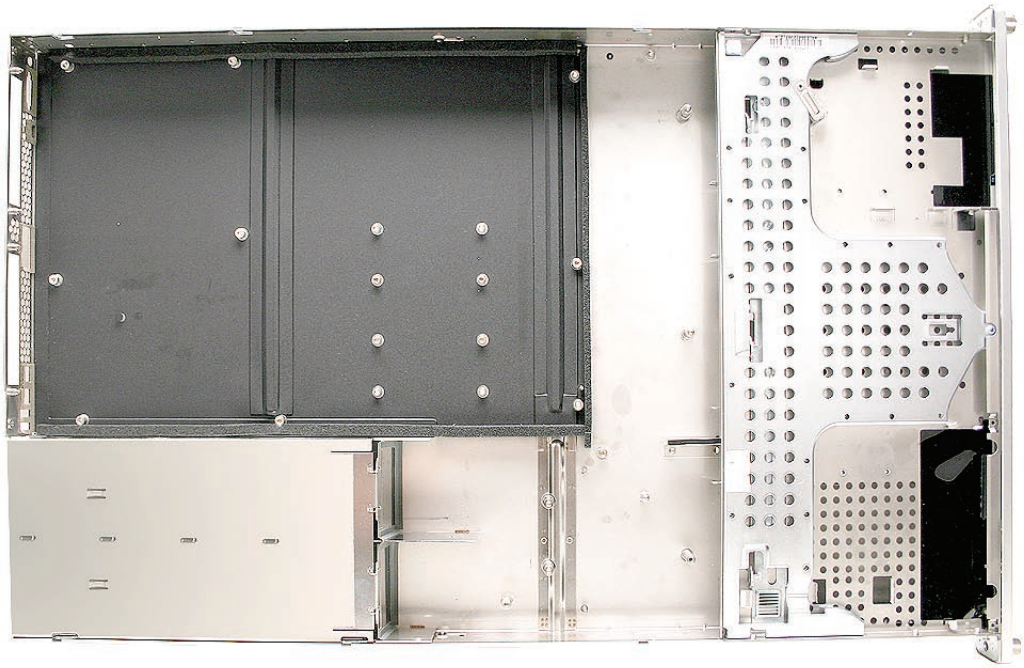
No tools are required for this procedure.

Preliminary Steps

Before you begin, open the Xserve; place the bottom housing on a sturdy, flat surface; and remove the following:

- Both power supplies
- All Apple drive modules
- Optical drive
- PCI riser cards and any expansion cards in both slots
- Airflow duct
- Fan array
- Front panel board cable
- Backplane-to-logic board I/O cable
- Optical drive cable
- Locking mechanism rod
- Front panel board
- Drive interconnect backplane
- Power distribution board cable
- Power distribution board
- Both processor heat sinks
- Logic board
- ID tab

Part Location



Procedure

Once all other components have been removed from the enclosure, what is left is the enclosure itself.

Service Source

Troubleshooting

Xserve (Late 2006)

© 2006, 2007 Apple Inc. All rights reserved.

General Information

What's New

The following are features of Xserve (Late 2006):

- Dual Intel Xeon 64-bit processor modules
- Serial-Attached-SCSI (SAS) drive modules supported
- Up to 32 GB of FB-DIMM memory supported
- Power supply redundancy supported
- Built-in video out via mini-DVI port
- PCI-X and PCI-E expansion cards supported

Dual Intel Xeon 64-bit processor modules

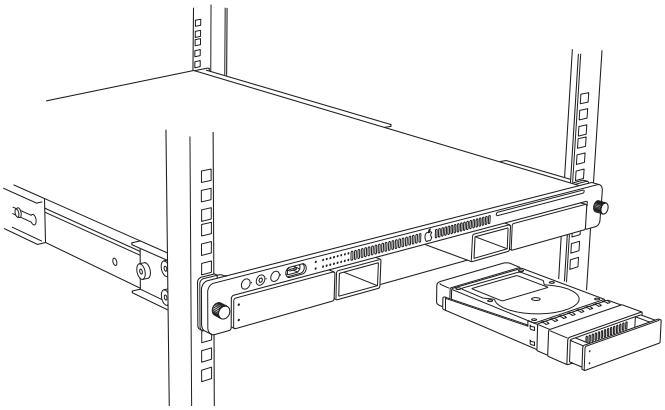
The Xserve (Late 2006) has the following processor configuration:

- Two 2.0 GHz, 2.66 GHz, or 3.0 GHz Dual-Core Intel Xeon 5100 processors
- 4 megabytes (MB) shared cache per processor
- Independent 1.33 gigahertz (GHz) system bus per processor

Hot-Pluggable SATA or SAS Drives

Xserve (Late 2006) includes three hard drive bays at the front of the Xserve. All bays support hot-pluggable Apple Serial ATA (SATA) or Serial Attached SCSI (SAS) drive modules.

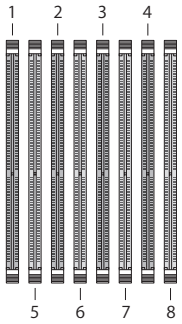
In the Xserve (Late 2006), drive bays are numbered 1–3,beginning with the far left bay. The bay in which a drive is installed determines its master/slave position, thereby eliminating the need for jumpers or special drive configuration. The drive installed in bay 1 is the master drive and should have the operating system installed on it.



You can replace or install hard drives while the Xserve is running; you do not need to shut down or open the Xserve first, but you may need to dismount the drive from the Xserve OS beforehand. A status light on the front of each drive indicates when it is safe to remove the drive without losing data. For more information, see "Hard Drive Module" in the Take Apart chapter.

FB-DIMM Memory

The Xserve (Late 2006) has 8 memory slots. The systems come with at least 1 gigabyte (GB) of memory on two fully-buffered dual inline memory modules (FB-DIMMs). To improve performance and capacity, you can install additional DIMMs for a total of up to 32 GB of memory. The 8 memory slots are labeled DIMM 1 through DIMM 8.



You can use the following memory in the Xserve (Late 2006):

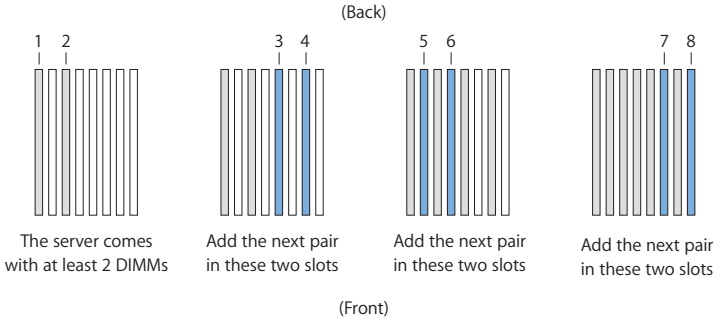
- 667 MHz DDR2 ECC FB-DIMMs
- 512 MB, 1 GB, 2 GB, or 4 GB in matching pairs (optimal, 4 or 8 identical DIMMs)
- 36 devices per DIMM, maximum
- Error-correcting code (ECC)

Important: Apple recommends that you use Apple-approved FB-DIMMS. Other FB-DIMMs might degrade the performance of the Xserve. DIMMs from older Xserve systems are not compatible with this Xserve.

Note: Before you purchase DIMMs other than those recommended by Apple, make sure that the memory manufacturer conforms to the Joint Electronic Device Engineering Council (JEDEC) specification. Make sure that the DIMMs support the correct timing modes and that the Serial Presence Detect (SPD) feature has been implemented in accordance with the JEDEC specification. To check DIMM compatibility, see the Macintosh Products Guide on Apple's website at www.apple.com/guide. You can purchase Apple-approved memory online from the Apple Store at www.apple.com/store.

Installation Rules

You must install DIMMs in pairs, and the DIMMs in each pair must be identical (the same size, speed, etc.). The first pair is installed in slots 1 and 2. Install the next pair in slots 3 and 4. Subsequent pairs go slots 5 and 6, and then slots 7 and 8.

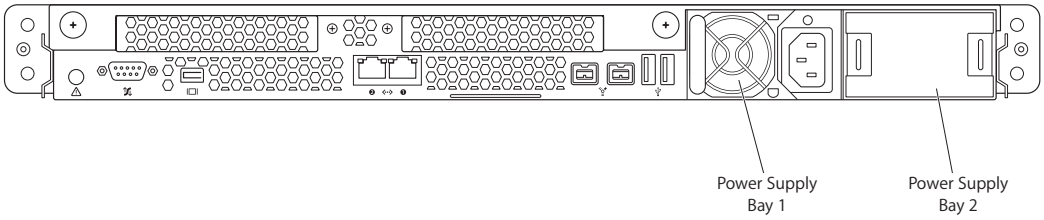

(Back)
1 2
3 4
5 6
7 8
The server comes with at least 2 DIMMs
Add the next pair in these two slots
Add the next pair in these two slots
Add the next pair in these two slots
(Front)

For Best Performance

For the best performance, use identical DIMMs in all slots and fill up slots 1 through 4 before you install DIMMs in slots 5 through 8. If you don't have eight identical DIMMs, install identical DIMMs in slots 1 through 4 and a second set of four identical DIMMs in slots 5 through 8. If you can, after you fill slots 1 through 4, add a full set of four DIMMs in slots 5 through 8 instead of just a pair in slots 5 and 6.

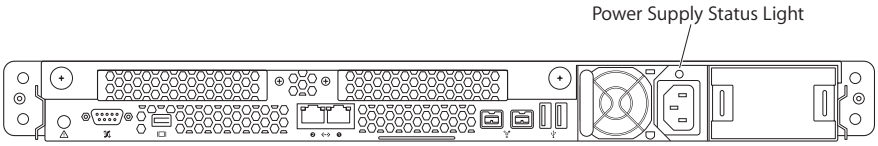
Power Supply Redundancy

The Xserve supports up to two power supply modules for redundancy. There are two power supply bays in the rear of the Xserve's enclosure. You can replace or install a power supply from the back panel without removing the Xserve from the rack. If the Xserve has two power supplies, they are hot-swappable; the Xserve will continue to operate using only one supply while the second is removed. For more information about removing or installing power supply modules, see "Power Supply" in the Take Apart chapter.



Power Supply Status LED

The power supply status LED is located above the AC power connector on each power supply. This LED will illuminate either green or red to indicate status.



If the Xserve is already running when inserting a second power supply, the status light on the new supply will illuminate SOLID GREEN when it's turned on, to indicate normal operation as it starts sharing the load.

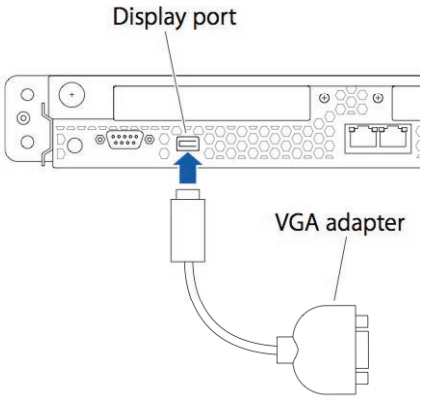
If the Xserve is not turned on, the supply status light BLINKS GREEN when the power cord is plugged in to an outlet with power, to indicate that power is available but power to internal components from this supply is on standby.

If the Xserve has two power supplies and no AC power is available to one of the power supplies, or if one of the power supplies has failed, that power supply's status LED will illuminate SOLID RED.

Note: In a redundant power supply configuration, it is strongly recommended that independent AC mains circuits be used to connect to each power supply, if possible. This way, if one AC mains circuit fails, the other AC mains circuit and power supply will continue to supply the entire Xserve system.

Built-in Video Display Port

Most Xserve (Late 2006) configurations have built-in video support to drive many different types of displays without needing to add a PCI video card. A mini-DVI display port on the rear panel supplies the video output. An internal video mezzanine card supplies the built-in video. The video circuitry is based on an ATI RV515 graphics chipset with 64 MB of VRAM (or 256 MB of VRAM in a CTO configuration).

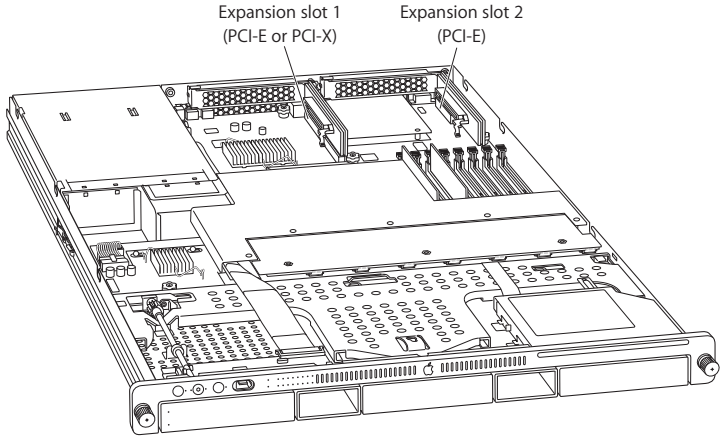


A mini-DVI to VGA display adapter (such as the one shown above) is included with the Xserve. The Xserve mini-DVI display port also supports other optional Apple video adapters, such as the Apple mini-DVI to DVI adapter, and the Apple mini-DVI to Video adapter.

PCI-X and PCI-E Expansion Cards

The Xserve (Late 2006) has two expansion slots:

- Slot 1, which accepts full-length (9 inch) PCI-E or PCI-X cards
- Slot 2, which accepts half-length (6.6 inch) PCI-E cards



The Xserve (Late 2006) accepts PCI cards that meet these specifications:

Slot 1

- Accepts 64-bit PCI-X 133 MHz cards (using a PCI-X riser)
- Also accepts 32-bit or 64-bit 33, 66, or 100 MHz PCI or PCI-X cards with 3.3 volt universal signaling
- Also accepts PCI-E x8 cards (using a PCI-E riser)
- 9 inch maximum length
- 25 Watt maximum power consumption

Slot 2

- Accepts PCI-Express x8 cards (using a PCI-E riser)
- 6.6 inch maximum length
- 25 Watt maximum power consumption

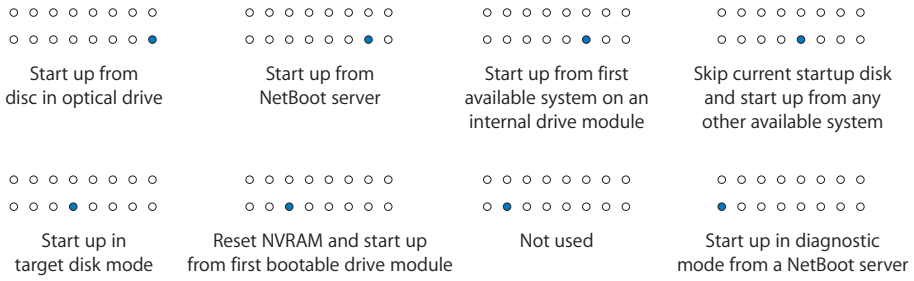
For more information, see "Expansion Cards" in the Take Apart chapter.

Selecting an Alternative Startup Method from the Front Panel

You can use the Xserve's front panel controls to choose from optional startup methods that might be helpful in special circumstances.

To choose an alternative startup method from the front panel:

1. With the power off, hold in the system identifier button while you press the on/standby button.
2. Continue to hold in the system identifier button until the top row of blue lights blinks sequencially.
3. Release the system identifier button, and then press it again repeatedly to turn on the light that corresponds to your chosen startup method:


Start up from disc in optical drive
Start up from NetBoot server
Start up from first available system on an internal drive module
Skip current startup disk and start up from any other available system
Start up in target disk mode
Reset NVRAM and start up from first bootable drive module
Not used
Start up in diagnostic mode from a NetBoot server

4. When you have made your choice, hold in the system identifier button until all lights on the top row are on, and then release.

The Xserve starts up using the chosen method.

Ports

The Xserve includes the following ports on the back panel: two gigabit Ethernet ports, two FireWire 800 ports, two USB 2.0 ports, a built in mini-DVI display port, and a serial port that supports RS-232 or RS-422 connection. There is also one FireWire 400 port on the front of the Xserve.

System administrators or service providers can connect a laptop computer or terminal to the serial port and then use command-line tools to change settings on the Xserve. The connection requires a serial cable with these specifications:

- DB9 connector
- 8-bit
- no parity
- 1 stop bit
- 9600 kbps

Note: For a diagram of all front- and rear-panel port locations, see "External Views" in the Views chapter.

Resetting the Logic Board

System Management Controller (SMC) Reset

The System Management Controller (SMC) is a chip on the logic board that controls all power functions for the Xserve. If the Xserve is experiencing any power issue, resetting the SMC may resolve it. The SMC controls several functions, including:

- Telling the Xserve when to turn on, turn off, sleep, wake, idle, and so forth
- Handling system resets from various commands
- Controlling the fans

It is also recommended that the SMC be reset on any new logic board after it is installed as part of a repair.

Note that resetting the SMC does not reset the PRAM. Resetting the SMC will not resolve issues in which the Xserve is unresponsive—in these situations, restarting the Xserve will generally suffice. If the Xserve isn't responding, perform these steps one at a time, in the following order, until the issue has been resolved:

1. Force Quit (Option-Command-Escape)
2. Restart (Control-Command-Power)
3. Force Shut Down (press the power button for 10 seconds)

Resetting the SMC can resolve some Xserve issues such as not starting up, not displaying video, sleep issues, fan noise issues, and so forth. If the Xserve still exhibits these types of issues after you've restarted the Xserve, try resetting the SMC. There are two ways to reset the SMC on the Xserve.

To reset the SMC in the Xserve (Late 2006):

1. Shut Down the Xserve, either locally or using remote commands (or if the Xserve is not responding, hold the power button until it turns off).
2. Unplug the AC power cord.
3. Wait at least 15 seconds.
4. Plug the power cord back in, making sure the power button is not being pressed at the time.
5. Press the power button to start up the Xserve.

Real Time Clock (RTC) Reset

The Real Time Clock (RTC) is a chip on the logic board that controls the date and time functions of the Xserve. If the Xserve is experiencing an issue booting, resetting the RTC may resolve it. Follow these steps to reset the RTC:

1. Shut Down the Xserve, either locally or using remote commands (or if the Xserve is not responding, hold the power button until it turns off).

2. Unplug the AC power cord.
3. Remove the battery for at least 20 seconds.
4. Reinstall the battery and wait 5 seconds, then press the power button on the front panel to start up the Xserve.
5. You will need to re-set the system date and time to the current date and time since these parameters will be reset when the RTC is reset.

System Reset

The Xserve has a system reset switch on the logic board that may be used to restart the Xserve while it is powered up. This switch can be used to determine if a Xserve that won't consistently boot from a cold start has power supply issues. Follow these steps to reset the system:

With the Xserve powered up, press the SYS_RST switch located on the logic board to the rear of the FB-DIMM slots.

If the Xserve boots after you press the SYS_RST switch, try shutting the Xserve off and restarting by pressing the front panel power button. If the Xserve restarts when you press the SYS_RST switch but not from a cold start, the power supply may need to be replaced.

Power-On Self Test (POST) Error Indications

A power-on self test in the Xserve's ROM automatically runs whenever the Xserve is started up after being fully shut down (the test does not run if the Xserve is only restarted). If the test detects a problem, the status LED located above the power button on the front of the Xserve will flash in the following ways*:

One short flash followed by a longer off period

If the system does not have any valid memory to boot from due to (1) no FB-DIMMs detected, (2) memory initialization failure or (3) a quick memory test failure, then the front panel status LED will blink once repeatedly.

Three short flashes followed by a longer off period

If the quick memory test passes but the more exhaustive memory test later in the boot sequence fails, then the front panel status LED will blink three times repeatedly, and the FB-DIMM LED will illuminate red for the respective FB-DIMM.

Troubleshooting:

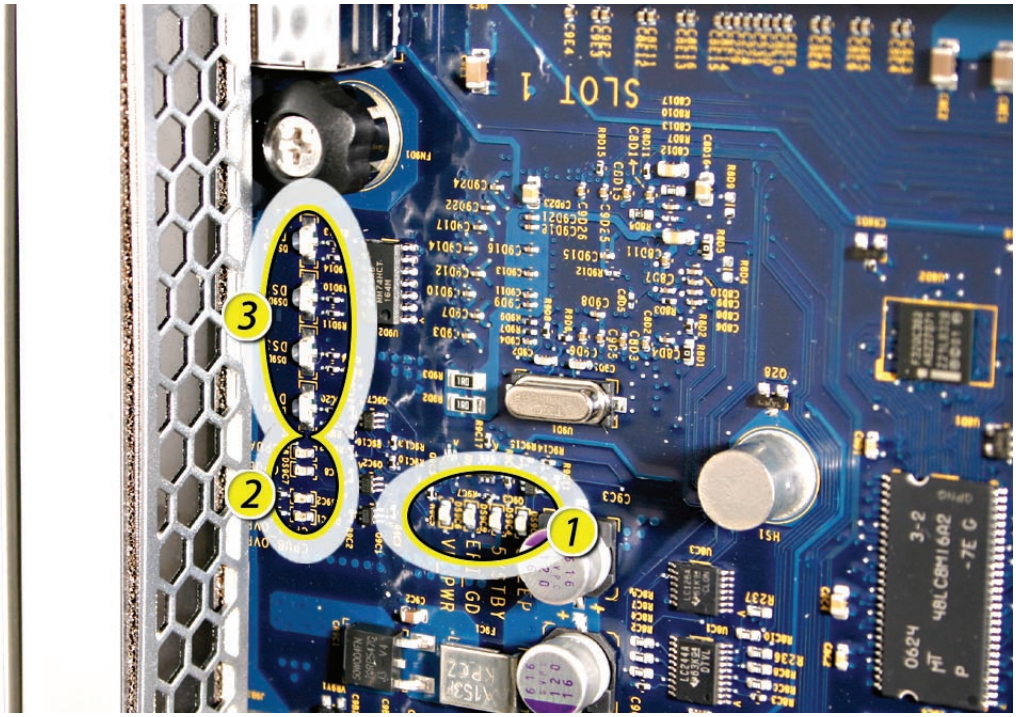
- Try reseating the memory FB-DIMMs. Check memory installation instructions for proper installation order. Swap affected FB-DIMM with known good FB-DIMM.

***Note:** The status LED lights up when the power button is depressed at startup. Do not count this light as one of the diagnostic flashes.

Diagnostic LEDs

The logic board includes three sets of LEDs to help service providers troubleshoot the Xserve:

- System status LEDs (1 in the illustration below)
- CPU status LEDs (2 in the illustration below)
- EFI POST LEDs (3 in the illustration below)



The LEDs are located toward the rear of the logic board. You must remove the top cover of the Xserve for the diagnostic LEDs to function.

Refer to the charts and information on the following pages for how to interpret the LEDs.

System Status LEDs

Location	Name	Normal State	Indicates
DS9C3	SLEEP	ON (Red)	System is in sleep mode.
DS9C4	5VSTBY	ON	Power supply is providing trickle power.
DS9C5	EFI_GD	Normally OFF; only flashes during boot cycle	Normal sequence indicates control has passed from EFI operations to the OS. If light stays on after boot cycle, EFI is crashing.
DS9C6	VR_PWR	ON	System is powered on.

DS9C3: SLEEP

Important: The red DS9C3 LED warns that the Xserve is in sleep mode. When this LED is ON, do not remove or replace PCI expansion cards or FB-DIMMs, because the Xserve is still powered on.

DS9C4: 5VSTBY

If the DS9C4 LED is OFF, do the following:

- Check that the AC cord is connected to a working AC wall outlet.
- Reseat the AC plug.
- Reseat the power supply.
- Replace the power supply.

DS9C5: EFI_GD

If the DS9C4 LED is OFF, do the following:

- Reset PRAM.
- Boot off an install disc.
- If the system does not boot from the install disc, replace the logic board.
- Replace the FB-DIMMs.
- Reseat CPU A.
- Reseat CPU B.
- Replace CPU A.
- Replace CPU B.

DS9C6: VR_PWR

If the DS9C6 LED is OFF, do the following:

- Check for any signs of an obvious electrical short, e.g. metal screws or PCI card slot cover loose inside Xserve touching the logic board.
- Reseat the power supply.
- Replace the power supply.

CPU Status LEDs

Location	Name	Normal State	Indicates
DS9C1	CPUB_OVERTMP	OFF	CPU B is operating at the right temperature.
DS9C2	CPUA_OVERTMP	OFF	CPU A is operating at the right temperature.
DS9C7	CPUB_HLTH	OFF	CPU B is operating correctly.
DS9C8	CPUA_HLTH	OFF	CPU A is operating correctly.

Note: Under normal operating conditions, the CPU status LEDs are all OFF; however, there may be exceptions. Refer to KnowledgeBase article ????

DS9C1: CPUB_OVERTMP and DS9C2: CPUA_OVERTMP

Note: These two LEDs can operate in two different modes; they will either flash or stay on. If either LED is flashing, it may indicate an initial processor over-temperature condition. If either LED is solidly on, it may indicate a chronic processor over-temperature condition. Initial processor over-temperature can cause symptoms such as sluggish Xserve performance. Chronic processor over-temperature can cause the Xserve to hang completely.

If DS9C1 or DS9C2 LED is ON, do the following:

- Verify proper heatsink installation.
- Verify all thermal sensors are properly connected.
- Verify the fan array is operating properly.
- Verify the airflow duct is properly in place and nothing is blocking its airflow.

DS9C7: CPUB_HLTH and DS9C8: CPUB_HLTH

If DS9C7 or DS9C8 LED is ON, do the following:

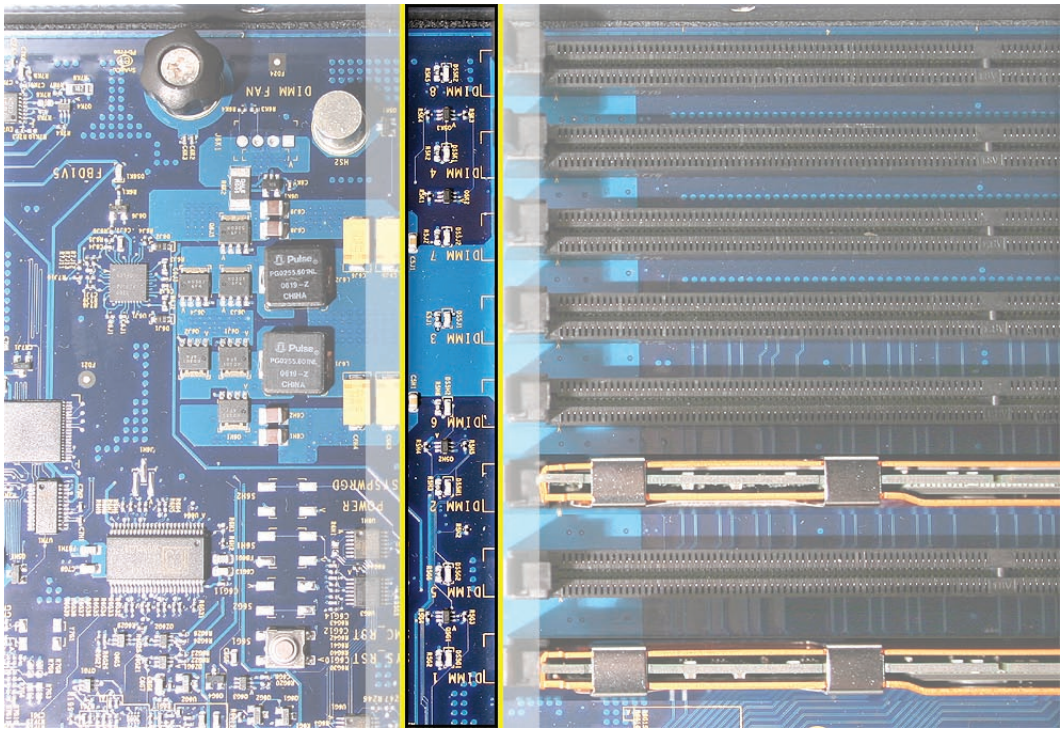
- With the Xserve booted, press the SYS_RST switch. If this turns off the LED, check for incompatible device driver software that may have been installed for added hardware.
- If the LED is still on, power down the Xserve and try resetting the SMC. Restart the Xserve.
- Reset the power supply by unplugging the AC cord for 20 seconds.
- Unplug the AC cord and remove any added FB-DIMMs and PCI Express cards. If this causes the LED to go off, repopulate the FB-DIMMs and/or PCI Express cards to find the combination that caused the LED to come on. Overheated memory could be a possible cause for this LED to come on. Check fan array operation.
- Unplug the AC cord and remove the battery for 10 seconds. Reinstall the battery, wait 5 seconds, and restart the Xserve.
- Try swapping CPU A and CPU B locations. If the LED follows the CPU, replace that CPU.
- Try replacing the logic board.

EFI POST LEDs

The four EFI POST LEDs, DS1–DS4, are tri-state colored LEDs that may be green, red, or amber. When the Xserve (Late 2006) is powered on, the four LEDs light up and display different patterns of colors. If the system hangs, record the color for each LED and contact AppleCare technical support to report the pattern.

Memory Diagnostic LEDs

The Xserve (Late 2006) logic board includes diagnostic LEDs for each FB-DIMM. Each of the LEDs will light if it detects an issue with the corresponding installed FB-DIMM. These LEDs will also flash briefly when the computer is started up or shut down and when it goes in and out of sleep mode. This is normal behavior.



Troubleshooting:

- Shutdown and restart the computer.
- Try reseating the FB-DIMMs.
- Check memory installation instructions for proper installation order.
- Swap affected FB-DIMM with known good FB-DIMM.
- Try moving FB-DIMM to another slot (within the same bank of two) to see if the failure LED follows the FB-DIMM. If so, replace FB-DIMM with known good FB-DIMM.

Power Supply Verification

To power on, the Xserve's logic board requires "trickle" power. If the system fails to power on, first reset the SMC as described in this chapter. If the Xserve still doesn't power on, follow the procedure outlined below to determine whether the issue is related to the power supply.

Verify trickle power

Diagnostic LED DS9C4 (5VSTBY) indicates the presence of trickle power required by the logic board to begin the startup process.

LED DS9C4 should be ON when the power supply is plugged into a good AC outlet, indicating that trickle voltage is present.

Verify Power Supply Is Providing Power

Diagnostic LED DS9C6 (VR_PWR) indicates that the main power is OK and within regulation.

Plug in AC power cord, and press the power-on button on the front panel.

LED DSC9C6 should be ON when the Xserve starts up, indicating that the main power is OK and within regulation.

If you cannot verify these LEDs are on, try replacing the power supply with a known-good one. If you are working with an Xserve with two power supplies, try removing one and test one at a time to determine which one may have the issue. Also try the same known-good power supply in each power supply bay, to see if the issue is related to a single bay or not.

If you try a known-good power supply in both bays and you are still having power issues, try replacing the power distribution board.

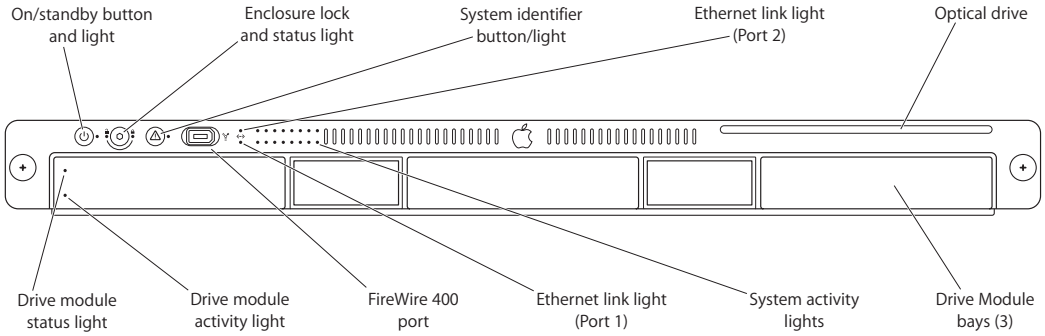
Internal Sensor Locations

Xserve (Late 2006) includes many built-in sensors that report on hard drives, internal temperature, fan status/failure, and power status/failure. These sensors allow you to monitor the Xserve's operation.

For more detailed information, see the "Appendix" at the end of this manual.

Front Panel Status Lights

The Xserve's status lights are shown in the figure and table below.



On/standby button and light

On/standby button and light. Press to turn on the Xserve. Press for 10 seconds to force the Xserve to shut down if all other shutdown methods fail.

Enclosure lock and lock status light

The lock secures the Xserve cover and drive modules. It can be locked and unlocked with the enclosure key supplied with the Xserve. An option in the Security pane of System Preferences lets you inactivate a connected keyboard and mouse when the enclosure lock is engaged. This option is turned off by default. When the enclosure is locked (the light is on), the Xserve might not recognize peripheral devices such as a keyboard, mouse, or storage device. Unlock the lock to use those devices.

System identifier button and light

The system identifier light flashes if a problem is detected. You can also turn it on manually by pressing the button or turn it on remotely using Server Monitor. This indicator is useful for locating a particular unit in a rack with more than one Xserve. A second system identifier button and light are on the rear panel.

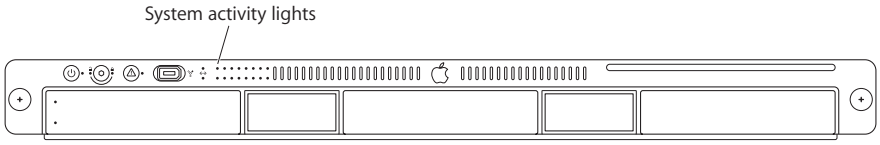
Ethernet link lights

Two lights indicate whether the Xserve is connected to an Ethernet network. Each light represents one of the two built-in Ethernet ports: the bottom light port 1 and the top light port 2.

System activity lights

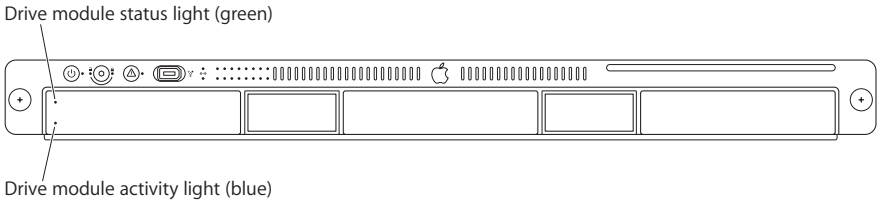
Four groups of four lights indicate system activity. The front panel system activity LEDs will flash blue intermittently to represent an estimate of processor activity and load. Each row is divided in half so four lights represent each of the four processor cores. You also use these lights to select an alternative method for starting the Xserve using the front panel startup options; see

"Choosing an Alternative Startup Method from the Front Panel" in this chapter.



Drive module (upper LED)

- Green - Powered and running
- Yellow - Warning condition; replace drive
- Red - Problem or failure; replace drive



Drive module (lower LED)

- No light - Drive can be removed
- Blinking blue - Disk activity; do not remove drive

Remote Monitoring Software

Server Monitor

Server Monitor is an application installed with Xserve system software, which can also be installed on a Mac OS X client computer, that provides ongoing status monitoring of the following information about a remote Xserve:

- Installed operating system
- Drive status and activity
- Power supply operation
- Enclosure and processor temperature
- Fan array operation
- Security
- Network operation

You can also use Server Monitor to:

- Retrieve logs of activity and Apple System Profiler reports on remote Xserves
- Restart and shut down a remote Xserve
- Alert you via email and/or page when a significant service issue arises

Apple Xserve Diagnostics (AXD)

Apple Xserve Diagnostics performs several tests on the Xserve's hardware and creates a test report. The diagnostic software is located on the Xserve's Server Admin Tools disc, which can be used to start up the Xserve and execute these diagnostic tests. Also, using a remote admin computer, you can run tests on either a working Xserve or on a Xserve that does not start up normally. For more information on how to configure and use AXD, please refer to the user's guide that comes with the diagnostic software.

Symptom Charts

How to Use the Symptom Charts

The Symptom Charts included in this chapter will help you diagnose specific symptoms related to the product. Because cures are listed on the charts in the order of most likely solution, try the cures in the order presented. Verify whether or not the product continues to exhibit the symptom. If the symptom persists, try the next cure.

Note: If a cure instructs you to replace a module, reinstall the original module before you proceed to the next cure.

Startup

System is completely dead (no fan array movement and power LED is not illuminated)

1. Verify that the rear system ID button on the back of the logic board aligns with the opening in the chassis back panel. If it does not, realign the logic board.
2. Verify the power outlet is good.
3. Replace the power cord.
4. Disconnect external devices, including the display, and start up the Xserve.
5. Remove both internal PCI riser cards and any installed expansion cards and start up the Xserve.
6. Verify that the power supply is properly connected to the power distribution board.
7. Verify the front panel board cable is properly connected at both ends.
8. Reseat the front panel board.
9. Verify all cable connections to the logic board and drive interconnect backplane.
10. Replace the power supply.
11. Replace the front panel board cable.
12. Replace the front panel board.
13. Replace the drive interconnect backplane.
14. Replace the logic board.

Memory error message appears on the screen

1. Reseat the FB-DIMMs.
2. Verify that the correct FB-DIMMs are installed.
3. Run Apple Xserve Diagnostics. If the test finds bad memory, replace the FB-DIMMs one at a time and test until all bad FB-DIMMs are replaced with known-good modules.

Flashing question mark appears on the connected display

1. Reseat the drive module in the first drive bay.
2. Start up from the system restore disc and check to see if the hard drive shows up on the desktop. If it does, go to step 3. If it does not, go to step 5.
3. Run Disk Utility to check the drive.
4. Reinstall system software using the system restore disc that came with the Xserve.
5. Replace the drive module in the first drive bay.

Server begins to power up, the fan array and hard drive are spinning, the power LED is illuminated, but there are no activity lights or video on external display

1. Verify that the rear system ID button on the back of the logic board aligns with the opening in the chassis back panel. If it does not, realign the logic board.
2. Reset the SMC. Refer to "Resetting the SMC" in this chapter.
3. Reseat both processors.
4. Verify all PCI riser cards and installed expansion cards are seated properly.
5. Replace both processors.
6. Replace the logic board.

Server begins to power up, but won't boot, and top row of activity LEDs continue to light in sequence left to right and then right to left

1. Verify that the rear system ID button on the back of the logic board aligns with the opening in the chassis back panel. If it does not, realign the logic board.
2. Reset the SMC. Refer to "Resetting the SMC" in this chapter.
3. Remove the front bezel and make sure the front system ID button is not stuck. Reseat the button if necessary.
4. Reseat the front panel board and cable connectors.
5. Replace the front panel board.

System shuts down intermittently

1. Verify that the rear system ID button on the back of the logic board aligns with the opening in the chassis back panel. If it does not, realign the logic board.
2. Make sure the power cord is plugged in firmly.
3. Check that the power source is turned on and the correct voltage is present.
4. Make sure the air vents are clear.
5. Replace the power cord.
6. Check that the fan array connector is connected and the fan array is operational.
7. Check that the heat sink is properly attached to the processor.
8. Check that all thermal sensor cables are properly connected.
9. Reset the SMC. Refer to "Resetting the SMC" in this chapter.
10. Replace the power supply.
11. Replace the logic board.

System shuts down almost immediately after startup

1. Reset the SMC. Refer to "Resetting the SMC" in this chapter.
2. Replace both processors.
3. Replace the power supply.
4. Replace the logic board.

Built-in Video

External display has no video, but activity lights flash at startup, drive operates, fan array is spinning, and power LED is illuminated.

1. Verify that the rear system ID button on the back of the logic board aligns with the opening in the chassis back panel. If it does not, realign the logic board.
2. Check mezzanine video card mini-DVI connector and pins.
3. Check mini-DVI adapter pins and replace the adapter, if necessary.
4. Test with a known-good display. Replace the display, if necessary.
5. Remove all third-party devices.
6. Reseat the mezzanine video card.
7. Clear parameter RAM. Hold down Command-Option-P-R during startup.
8. Reset the SMC. Refer to "Resetting the SMC" in this chapter.
9. Replace the mezzanine video card.
10. Replace the logic board.

Video is distorted

1. Refer to the adjustments section of the service manual or owner's manual for the external display. Adjust display as necessary.
2. Check mini-DVI adapter pins and replace the adapter, if necessary.
3. Test with a known-good display. Replace the display, if necessary.
4. Reseat the mezzanine video card.
5. Replace the mezzanine video card.

Hard Drive Modules

Apple Drive Module does not mount or is not recognized by the Xserve

1. Verify that the correct, compatible drive module is being used. See "Hard Drive Modules" in the take-apart chapter for more information regarding Apple Drive Module compatibility. Do not attempt to force an incompatible drive module into the Xserve or drive module and/or drive bay connector damage could result.
2. Remove the drive module from the Xserve and inspect it for any damage to its connector or the connector in that drive bay of the Xserve. Do not re-install the drive module if its connector is damaged or if the drive bay connector in the Xserve is damaged. If there is any visible damage, replace the damaged component.
3. Start up from the system restore disc and check to see if the hard drive shows up on the desktop. If it does, go to step 4. If it does not, go to step 5.
4. Run Disk Utility to check the drive.
5. Replace the drive module.
6. Re-seat the backplane to logic board I/O cable.
7. Replace the drive interconnect backplane.

Internal Optical Drive

Optical disc icon does not appear on the desktop

1. If the Xserve is locked, unlock it.
2. Check to see if the optical drive is listed in System Profiler. If it is, go to step 3. If it is not, go to step 8.
3. Verify the correct type of disc is being used. Try using a known-good disc.
4. Try cleaning the disc. (It may not mount if it is dirty or scratched.)
5. If there is a disc stuck in the drive, eject it by connecting a USB mouse and restarting the Xserve while holding down the mouse button.

6. Verify the firmware is the most recent version for that drive. Check Software Downloads for any current update.
7. Reinstall system software.
8. Reseat the optical drive cable at both connectors.
9. Replace the optical drive cable.
10. Replace the optical drive.

Optical drive does not accept disc

1. If the Xserve is locked, unlock it.
2. Verify the disc is not warped.
3. Verify the disc is not the wrong size. Refer to article 58641 "Macintosh: Using Nonstandard Discs in disc-ROM or DVD-ROM Drives."
4. Replace the optical drive.

Optical disc will not eject

1. If the Xserve is locked, unlock it.
2. Verify the disc is not in use by the system.
3. Drag the disc icon to the trash or select it and press Command-E.
4. Connect a USB mouse and restart the Xserve while holding down the mouse button to attempt to eject the disc.
5. Verify that the bezel over the slot is not bent. If it is, gently bend it back into position.
6. Reseat the optical drive cable at both connectors.
7. Replace the optical drive cable.
8. Replace the optical drive.

USB Devices

At startup, cursor does not move with the Apple mouse

1. If the Xserve is locked, unlock it.
2. Verify that mouse and keyboard connections are secure.
3. If the mouse is connected to the keyboard, connect the mouse to one of the USB ports on the back panel instead. If the mouse works, replace the keyboard.
4. Replace the mouse.
5. If the mouse is connected to one of the USB ports on the back panel, switch to the other USB port. If the mouse operates correctly, replace the logic board. (You can also use System Profiler to verify USB ports.)

No response to any key on keyboard

1. If the Xserve is locked, unlock it.
2. Verify that keyboard and mouse connections are secure.
3. Remove all USB devices, except the keyboard and mouse. If the keyboard operates correctly, troubleshoot the other USB devices.
4. Switch the keyboard to a different USB port. If the keyboard operates correctly, replace the logic board. (You can also use System Profiler to verify USB ports.)
5. Relaunch Finder.
6. Start up from the system installation disc or system restore disc that came with the Xserve. If the keyboard operates, reinstall system software.
7. Replace the keyboard.
8. Replace the logic board.

FireWire Devices

FireWire device connected to port on back panel: No FireWire device icon appears on the desktop

1. If the Xserve is locked, unlock it.
2. Verify that the FireWire device is turned on and the FireWire cable is securely connected to the device and the Xserve.
3. If the device requires external power, make sure it is plugged in.
4. Check that the FireWire device is listed in System Profiler. If it is, go to step 5. If it is not, go to step 6.
5. Check the FireWire device documentation to see if additional drivers are required. If so, make sure the drivers are installed.
6. Check for broken pins, dust, dirt, or wear on both FireWire cable connectors, the device FireWire port, and the Xserve FireWire port.
7. Reconnect the FireWire device to another FireWire port on the Xserve. If the Xserve has a bad FireWire port, replace the logic board.
8. Replace the FireWire cable.
9. Replace the FireWire device.
10. Replace the logic board.

FireWire device connected to port on front panel: No external FireWire device icon appears on the desktop

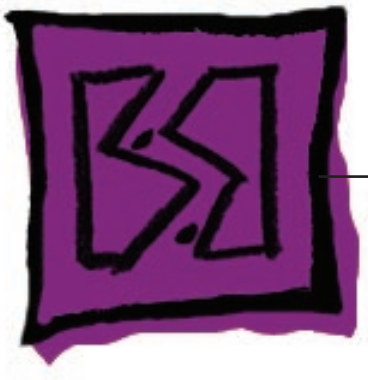
1. If the Xserve is locked, unlock it.
2. Verify that the FireWire device is turned on and the FireWire cable is securely connected to the device and the Xserve.
3. If the device requires external power, make sure it is plugged in.
4. Check that the FireWire device is listed in System Profiler. If it is, go to step 5. If it is not, go to step 6.
5. Check the FireWire device documentation to see if additional drivers are required. If so, make sure the drivers are installed.
6. Check for broken pins, dust, dirt, or wear on both FireWire cable connectors, the device FireWire port, and the Xserve FireWire port.
7. Reseat the front panel board cable on both ends.
8. Replace front panel board.

Network Problems

Server cannot be seen on network

1. Open the Network system preference pane and select the built-in Ethernet option. Verify that you can now see devices on the network.
2. If only one Ethernet port is in use, verify that it is the lower port. If it is not, move the Ethernet cable to the lower port.
3. Boot the Xserve from the Installation disc. Go to another computer on the same subnet and start Server Assistant. If the Xserve can be seen, the Xserve hardware should be functioning correctly. Check the software configuration on the Xserve, or reinstall and reconfigure the Xserve.
4. Try a known-good Ethernet cable.
5. Clear parameter RAM. Hold down Command-Option-P-R during startup.
6. Try connecting to a known-good Ethernet port at the wall or external hub.
7. Verify that other users are experiencing the same problem. If so, contact the network administrator.
8. If connected to an Ethernet card, reseat the card.
9. If connected to an Ethernet card, replace the card.
10. Replace the logic board.

Service Source



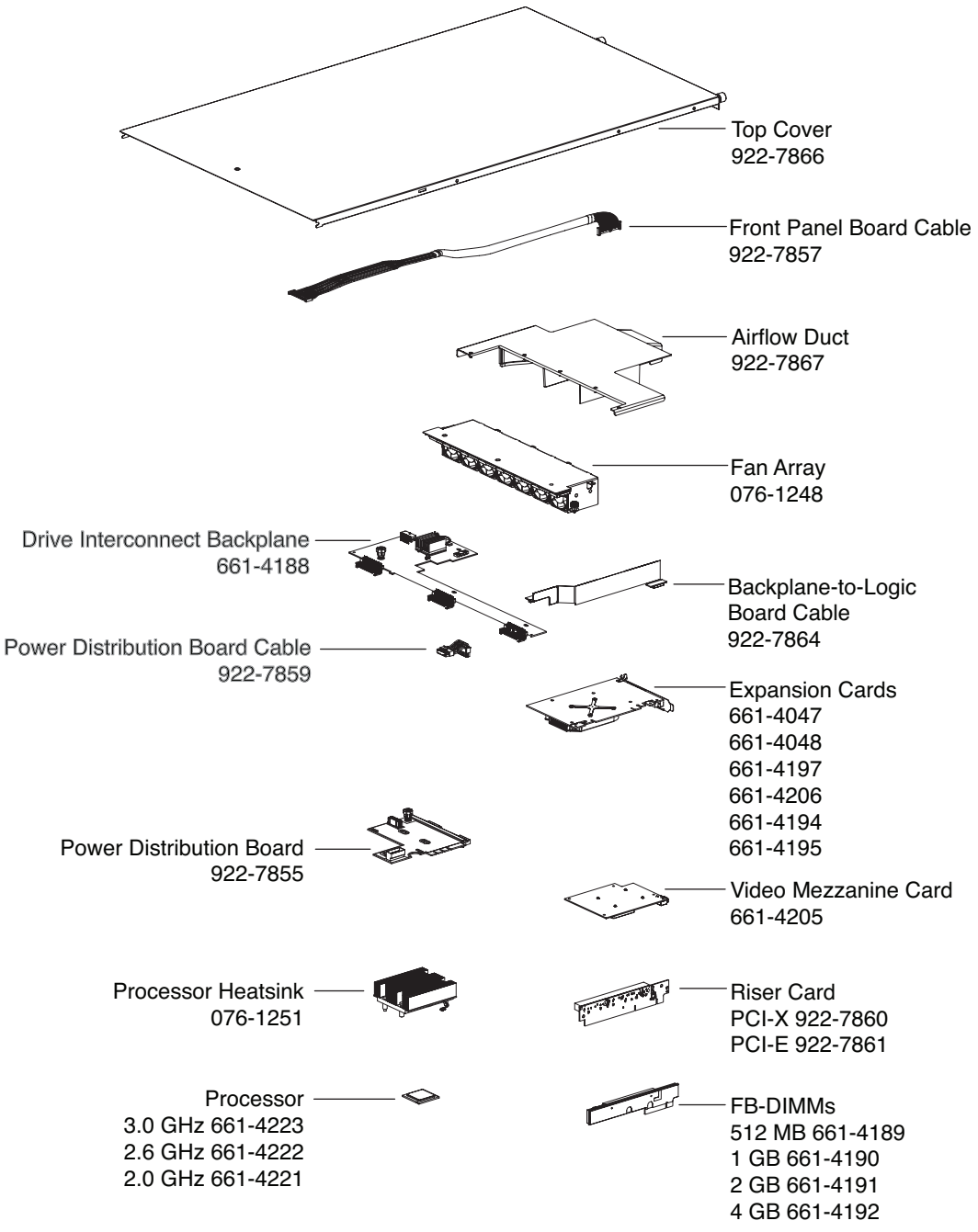
Views

Xserve (Late 2006)

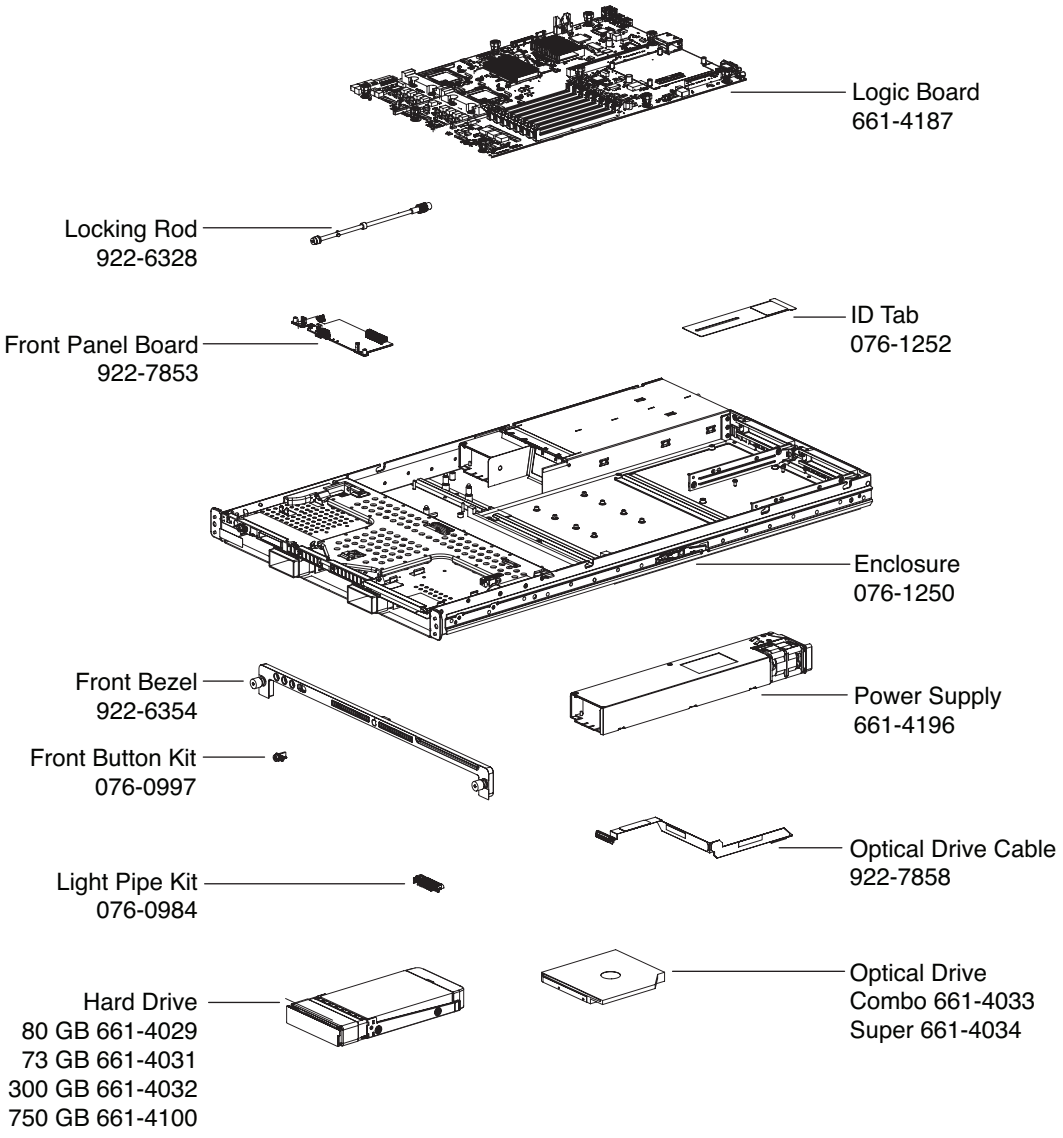
© 2006, 2007 Apple Inc. All rights reserved.

Internal Views

Exploded View 1

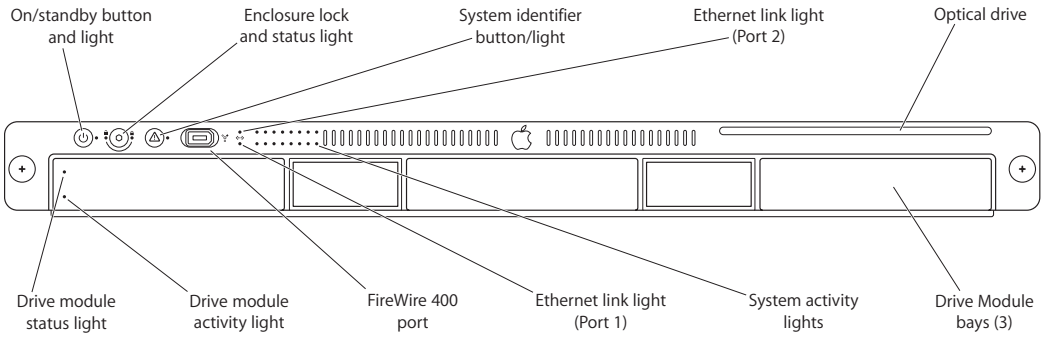


Exploded View 2

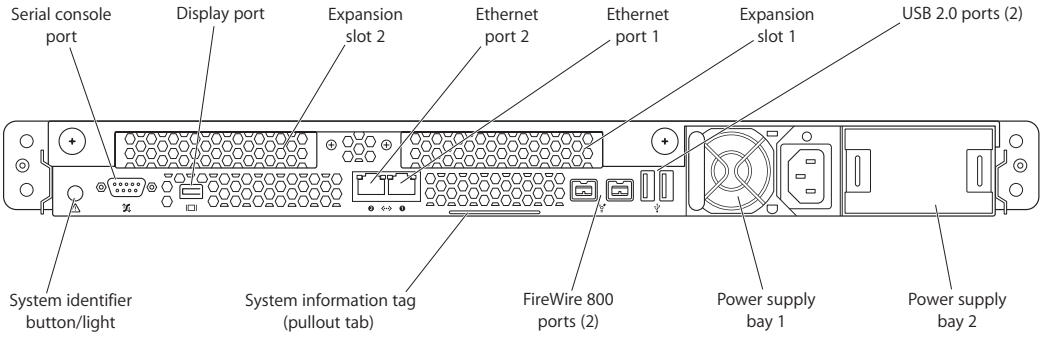


External Views

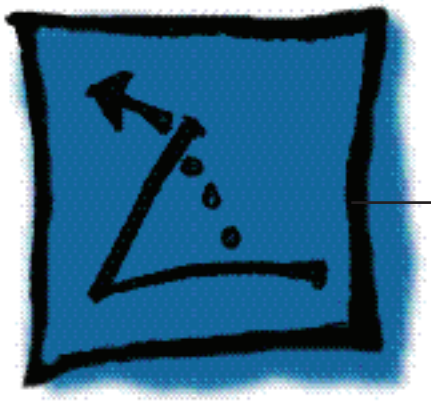
Front View



Rear View



Service Source



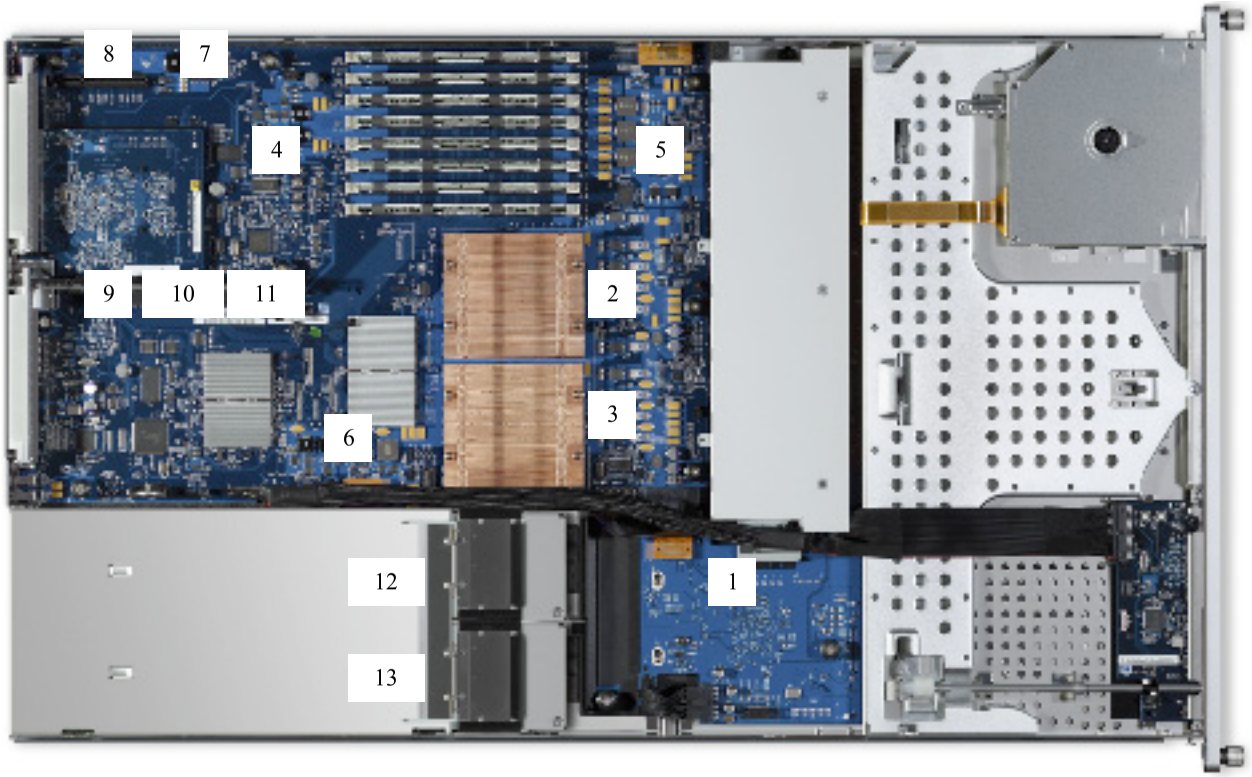
Appendix

Xserve (Late 2006)

© 2006, 2007 Apple Inc. All rights reserved.

Xserve (Late 2006) Internal Sensor Reference

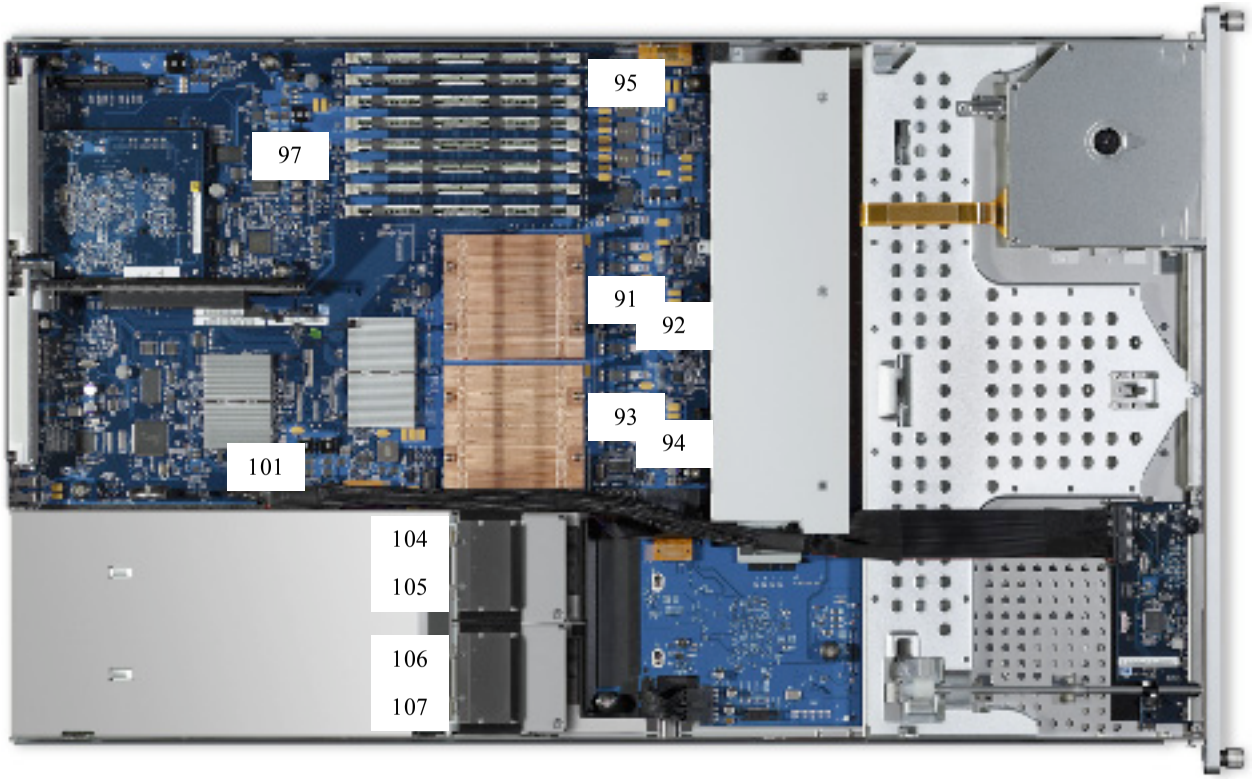
DC CURRENT SENSOR LOCATIONS



DC CURRENT SENSORS (MEASURED IN AMPS)

LOCATION	SENSOR DESCRIPTION	MIN	MAX
1	Backplane, Total Current for 12V, which includes the 5V and 3.3V Regulators	0.00	8.25
2	CPU A, Core Low Side (Vcore) Current	0.00	120.00
3	CPU B, Core Low Side (Vcore) Current	0.00	120.00
4	FBDIMM, P1V5 High Side (12V) Current	0.00	6.60
5	FBDIMM, P1V8 High Side (12V) Current	0.00	11.00
6	MCH and ESB2, Core High Side (12V) Current	0.00	6.60
7	PCI Slot 2, 12V Current	0.00	3.30
8	PCI Slot 2, 3.3V Current	0.00	11.00
9	PCI Slot 1, 12V Current	0.00	3.30
10	PCI Slot 1, 3.3V Current	0.00	11.00
11	PCI Slot 1, 5V Current	0.00	6.60
12	PSU 1, 12V Current (PSMI)	0.00	60.00
13	PSU 2, 12V Current (PSMI)	0.00	60.00

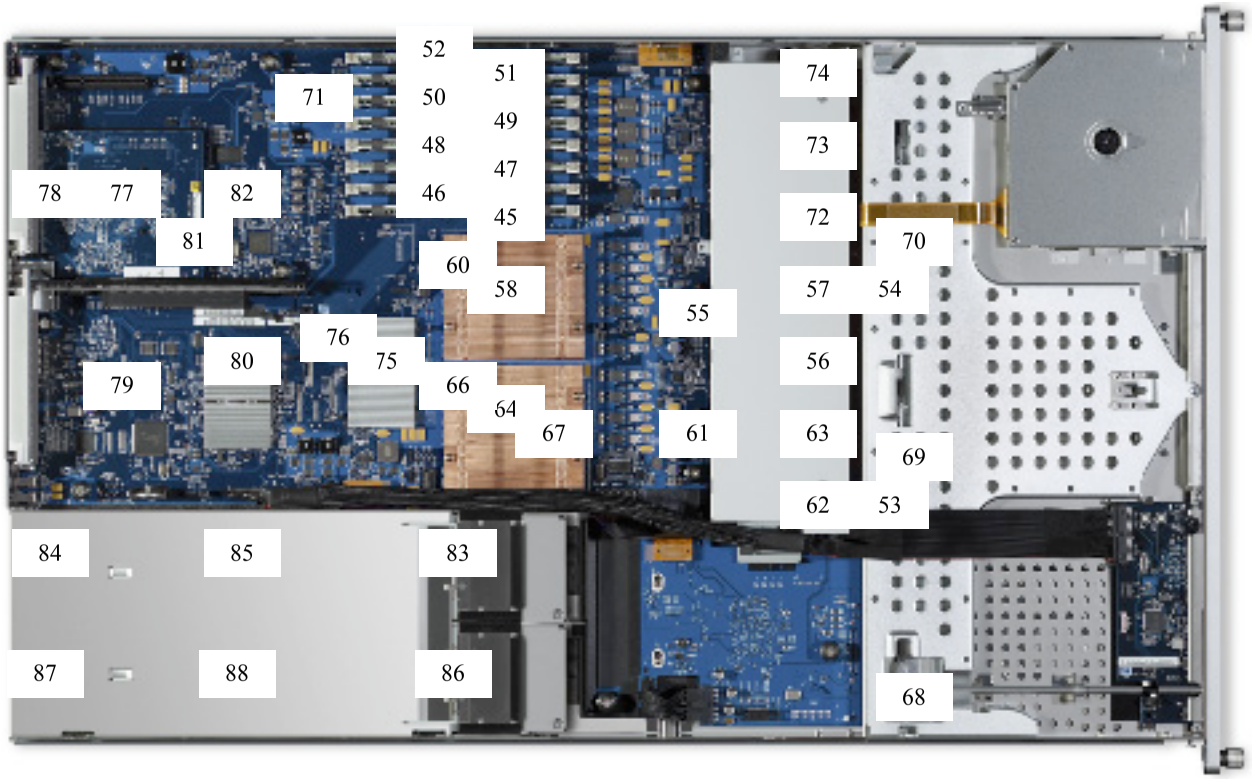
VOLTAGE SENSOR LOCATIONS



VOLTAGE SENSORS (MEASURED IN VOLTS DC)

LOCATION	SENSOR DESCRIPTION	MIN	NOMINAL	MAX
89	System, 1.5V AUX Voltage	1.43	1.50	1.58
90	System, 3.3V AUX Voltage	3.14	3.30	3.47
91	CPU A, Core Voltage	1.08	1.20	1.50
92	CPU A, VRM 12V Input Voltage	11.40	12.00	12.60
93	CPU B, Core Voltage	1.08	1.20	1.50
94	CPU B, VRM 12V Input Voltage	11.40	12.00	12.60
95	FBDIMM, 0.9V VTT Voltage	0.86	0.90	0.95
96	FBDIMM, Regulator 12V Input Voltage	11.40	12.00	12.60
97	FBDIMM, 1.8V Voltage	1.71	1.80	1.89
98	Firewire, 1.95V DVDD voltage	1.85	1.95	2.15
99	System, Main 12V Voltage	11.40	12.00	12.60
100	System, Main 3.3V Voltage	3.14	3.30	3.47
101	MCH and ESB2, 1.5V Core Voltage	1.43	1.50	1.58
102	NIC, 1.2V Voltage	1.14	1.20	1.26
103	NIC, 1.8V Voltage	1.71	1.80	1.89
104	PSU 1, 12V Voltage	11.40	12.00	12.60
105	PSU 1, 5V Voltage	4.75	5.00	5.25
106	PSU 2, 12V Voltage	11.40	12.00	12.60
107	PSU 2, 5V Voltage	4.75	5.00	5.25
108	System, PV_VTT Voltage	1.14	1.20	1.26
109	System, 5V StandBy Voltage	4.75	5.00	5.25

TEMPERATURE SENSOR LOCATIONS

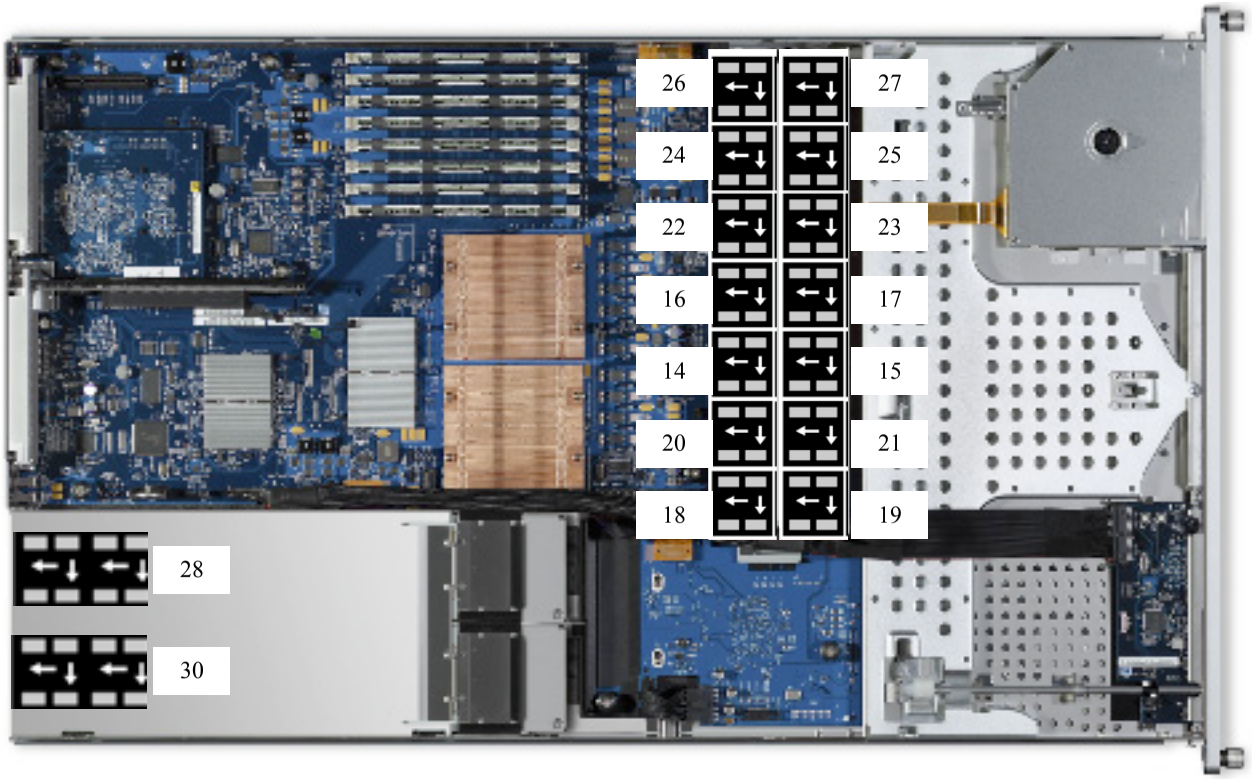


TEMPERATURE SENSORS (MEASURED IN DEGREES CELSIUS)

LOCATION	SENSOR DESCRIPTION	MIN	NOMINAL	MAX
45	FBDIMM, Slot 1	5.00	85	90.00
47	FBDIMM, Slot 2	5.00	85	90.00
49	FBDIMM, Slot 3	5.00	85	90.00
51	FBDIMM, Slot 4	5.00	85	90.00
46	FBDIMM, Slot 5	5.00	85	90.00
48	FBDIMM, Slot 6	5.00	85	90.00
50	FBDIMM, Slot 7	5.00	85	90.00
52	FBDIMM, Slot 8	5.00	85	90.00
53	System, Ambient Temperature (Left Chunnel)	5.00		40.00
54	System, Ambient Temperature (Right Chunnel)	5.00		40.00
55	CPU A, Ambient Temperature (On the MLB, Fan Exhaust)	5.00		45.00
56	CPU A, Ambient Temperature 1 (On the Fan Board)	5.00		70.00
57	CPU A, Ambient Temperature 2 (On the Fan Board)	5.00		70.00
58	CPU A, Core 0 Relative Temperature to ProcHot (PECI)	0.00		60.00
59	CPU A, Core 1 Relative Temperature to ProcHot (PECI)	0.00		60.00
60	CPU A, HeatSink Temperature	5.00	55	75.00
61	CPU B, Ambient Temperature (On the MLB, Fan Exhaust)	5.00		45.00
62	CPU B, Ambient Temperature 1 (On the Fan Board)	5.00		70.00
63	CPU B, Ambient Temperature 2 (On the Fan Board)	5.00		70.00
64	CPU B, Core 0 Relative Temperature to ProcHot (PECI)	0.00		60.00
65	CPU B, Core 1 Relative Temperature to ProcHot (PECI)	0.00		60.00
66	CPU B, HeatSink Temperature	5.00	55	75.00
67	CPU B, PCB Temperature (Between CPU B and its VR)	5.00		85.00
68	Drive Bay 1, HDD Temperature (On Drive Carrier)	5.00	SAS:48, SATA:59	60.00
69	Drive Bay 2, HDD Temperature (On Drive Carrier)	5.00	SAS:53, SATA:57	60.00
70	Drive Bay 3, HDD Temperature (On Drive Carrier)	5.00	SAS:54, SATA:58	60.00
71	FBDIMM, Slot 4 Exit Ambient Temperature	5.00		65.00
72	FBDIMM, Ambient Temperature 1 (On the Fan Board)	5.00		70.00
73	FBDIMM, Ambient Temperature 2 (On the Fan Board)	5.00		70.00
74	FBDIMM, Ambient Temperature 3 (On the Fan Board)	5.00		70.00
75	MCH, Core Temperature	5.00		128.00
76	MCH, HeatSink Temperature	5.00	80	95.00

77	Mezzanine GPU, Core Temperature	5.00		100.00
78	Mezzanine GPU, Exhaust Temperature	5.00		65.00
79	PCI Slot 1, Ambient Temperature	5.00	47	65.00
80	PCI Slot 1, PCB Temperature (On the MLB)	5.00		65.00
81	PCI Slot 2 Ambient Temperature	5.00	47	65.00
82	PCI Slot 2 PCB Temperature (On the MLB)	5.00		65.00
83	PSU 1, Inlet Ambient Temperature	5.00	50	60.00
84	PSU 1, Primary Component Temperature	5.00	72	110.00
85	PSU 1, Secondary Component Temperature	5.00	70	90.00
86	PSU 2, Inlet Ambient Temperature	5.00	50	60.00
87	PSU 2, Primary Component Temperature	5.00	72	110.00
88	PSU 2, Secondary Component Temperature	5.00	70	90.00

FAN SPEED SENSOR LOCATIONS



FAN SPEED SENSORS (MEASURED IN RPM)

LOCATION	SENSOR DESCRIPTION	MIN	MAX
14	CPU A, Fan Speed (RPM) 1 Exhaust	2994 ±5%	10000 ±5%
15	CPU A, Fan Speed (RPM) 1 Intake	5000 ±5%	16700 ±5%
16	CPU A, Fan Speed (RPM) 2 Exhaust	2994 ±5%	10000 ±5%
17	CPU A, Fan Speed (RPM) 2 Intake	5000 ±5%	16700 ±5%
18	CPU B, Fan Speed (RPM) 1 Exhaust	2994 ±5%	10000 ±5%
19	CPU B, Fan Speed (RPM) 1 Intake	5000 ±5%	16700 ±5%
20	CPU B, Fan Speed (RPM) 2 Exhaust	2994 ±5%	10000 ±5%
21	CPU B, Fan Speed (RPM) 2 Intake	5000 ±5%	16700 ±5%
22	FBDIMM, Fan Speed (RPM) 1 Exhaust	2994 ±5%	10000 ±5%
23	FBDIMM, Fan Speed (RPM) 1 Intake	5000 ±5%	16700 ±5%
24	FBDIMM, Fan Speed (RPM) 2 Exhaust	2994 ±5%	10000 ±5%
25	FBDIMM, Fan Speed (RPM) 2 Intake	5000 ±5%	16700 ±5%
26	FBDIMM, Fan Speed (RPM) 3 Exhaust	2994 ±5%	10000 ±5%
27	FBDIMM, Fan Speed (RPM) 3 Intake	5000 ±5%	16700 ±5%
28	PSU 1, Fan Speed (RPM) 2, Inlet	7287 ±15%	13900 ±10%
29	PSU 1, Fan Speed (RPM) 1, Outlet	6800 ±15%	12800 ±10%
30	PSU 2, Fan Speed (RPM) 2, Inlet	7287 ±15%	13900 ±10%
31	PSU 2, Fan Speed (RPM) 1, Outlet	6800 ±15%	12800 ±10%